

MICRON P90PCI PowerStation

PCI-Bus System User's Manual

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Micron Computer, Inc.

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Unpacking

First, Check the Packaging

As soon as the packages containing your new system arrive, carefully inspect them for any signs of damage. In particular, look for wrinkled or bent corners, holes, or other signs of poor handling or abuse. If you notice any damage to the packaging, immediately open the boxes, following the directions below, and inspect the contents for damage. Pay close attention to the components near the area where the packing material may have been damaged.

Next, Unpack Your System

Caution: If your system arrives in cold weather, do not unpack the computer or the monitor until they have been allowed to reach room temperature. Immediately exposing them to the warm room may cause condensation to occur, which may damage the units. If condensation does occur, allow the units to completely dry before operating them.

Once you have determined that the packaging has been handled adequately, unpack and carefully inspect your system. Taking care not to damage the packing material, carefully open the cardboard box containing the computer and remove the system unit, keyboard, MS-DOS® package, and any other accessories you may have ordered.

Next, carefully unpack the monitor and all accessories from the monitor package while being careful not to damage the packing material.

Once you have unpacked your entire system, inspect all items for damage that may have occurred during shipment. ***For your protection, report any damage to the shipper immediately.***

We highly recommend that you save the packaging in the event that you need to move or ship the system sometime in the future.

Finally, Check Your Packing List

Now that you have everything out of the packages, take the time to check the packing list to be sure you received everything. If you discover that an item is missing, call Micron Computer, Inc. immediately to receive a replacement.

Setup

Getting Started

Before your new system left the factory, the hardware was configured, the display adapter was set to work with your monitor, and the hard disk was partitioned and formatted for DOS. DOS was then installed, using the standard default settings for your machine. In essence, your computer system is ready to go. All you have to do is plug it in.

What You Need

Grounded power outlet
Phillips-head screwdriver
Power filter/Surge Protection Device (recommended)

Putting It All Together

Before you begin, take a moment and review the case figures on pages 1-4 through 1-9 to acquaint yourself with the front and back of your system.

Next, check the voltage selector on the rear of the unit. Be sure it is switched for the proper voltage (115V in the United States and Canada).

Place the monitor where your preference dictates, as long as its cable can still reach the video connector at the rear of the computer.

Unpack the power cable for the computer and plug the appropriate end into the power inlet at the back of the system. Insert the other end into a grounded power outlet. We highly recommend that you obtain a surge protection device (i.e. UPS, power filter, surge suppressor, etc.) for your power line. This will provide the utmost protection for your system and data. ***NOTE: Please take a moment to ensure that the system is turned OFF before proceeding. Attaching peripherals while the power is on may damage the unit or the peripheral.***

Locate the monitor's power cable and plug the appropriate end into the monitor (if not already attached). Insert the other end into the grounded outlet or protection device.

Find the video cable and attach the appropriate end into the monitor (if not already attached) and attach the other end into the video adapter socket (located in one of the expansion slots at the rear of the unit). If the connection is loose on either end, tighten the integrated screws at both ends of the cable for a secure connection. For more information about the setup, use, and maintenance of your video monitor, please refer to the manual that was supplied with it.

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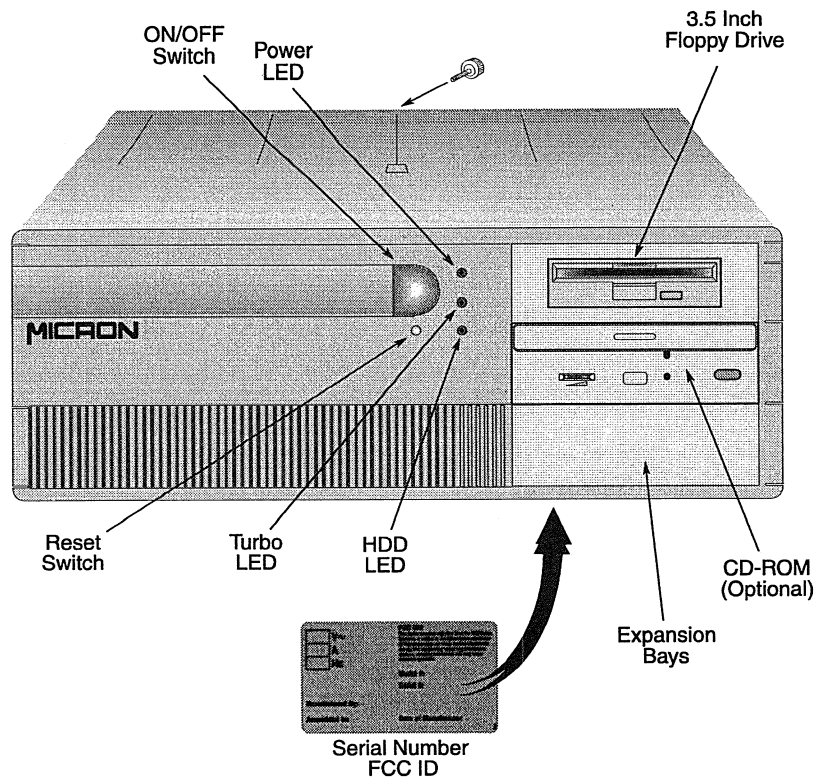


Figure 1-1. Desktop Front Case

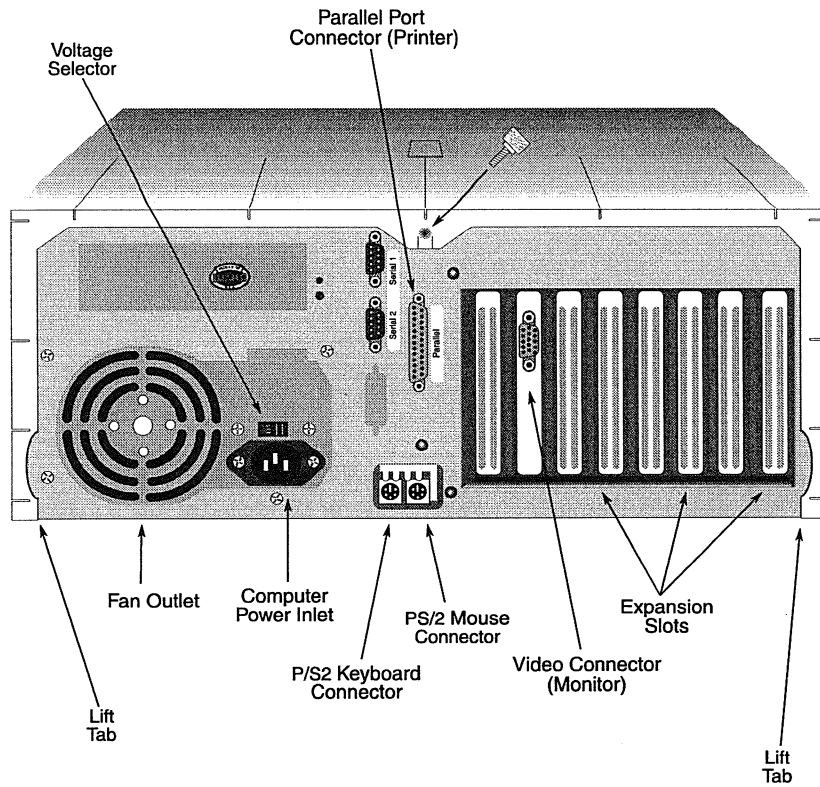


Figure 1-2. Desktop Rear Case

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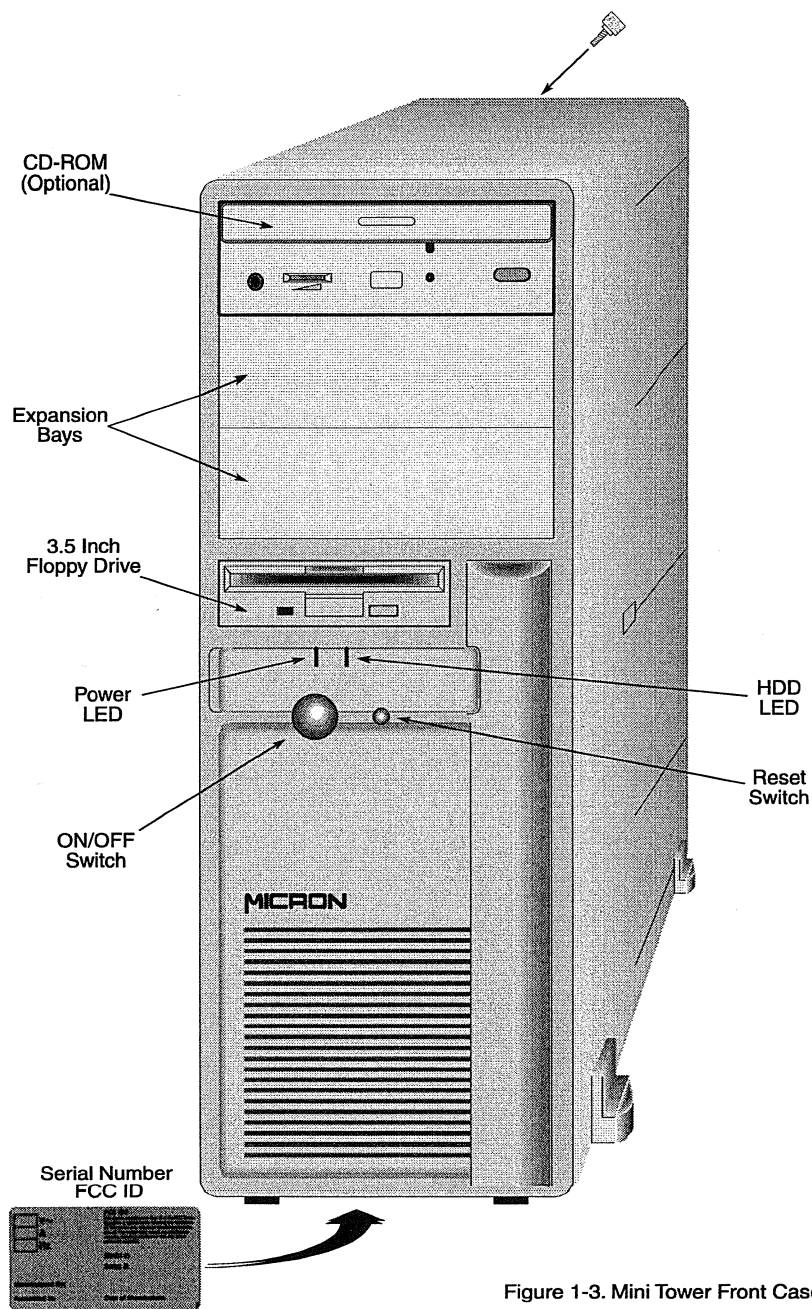


Figure 1-3. Mini Tower Front Case

Chapter 1: Setting Up Your System

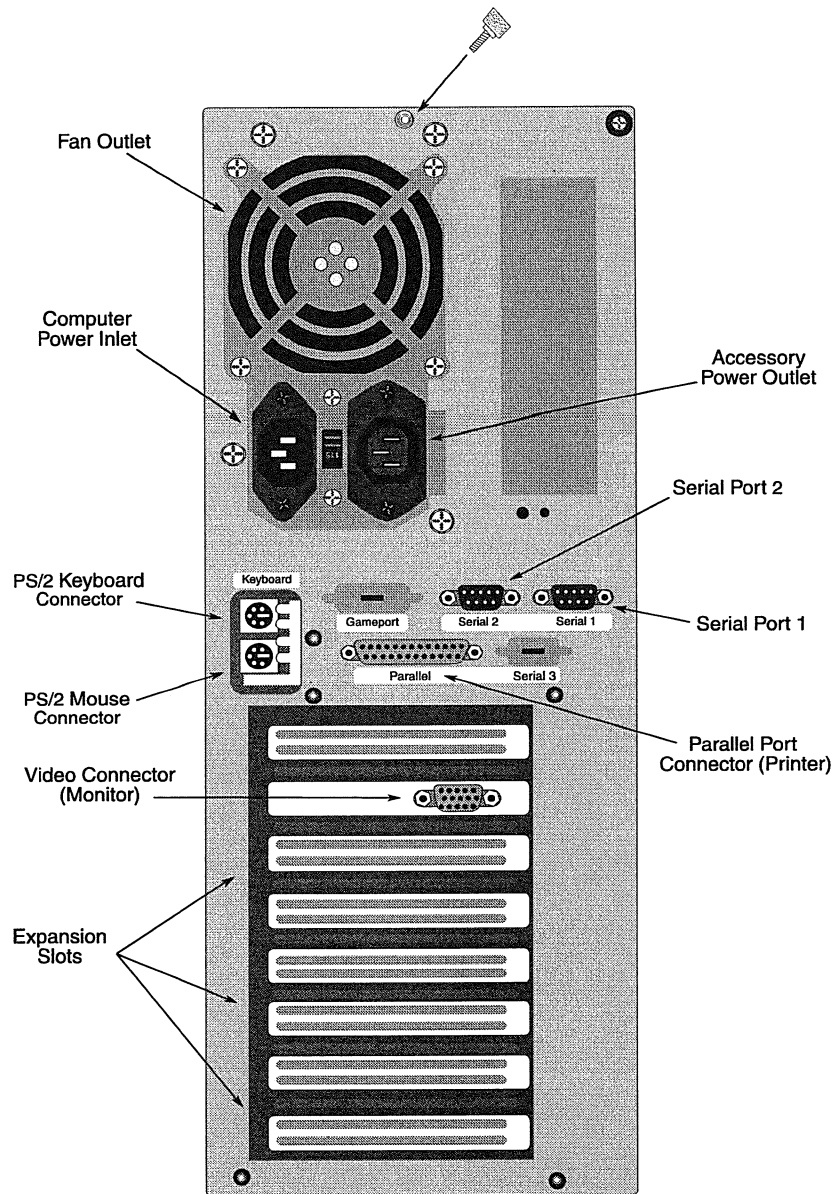


Figure 1-4. Mini Tower Rear Case

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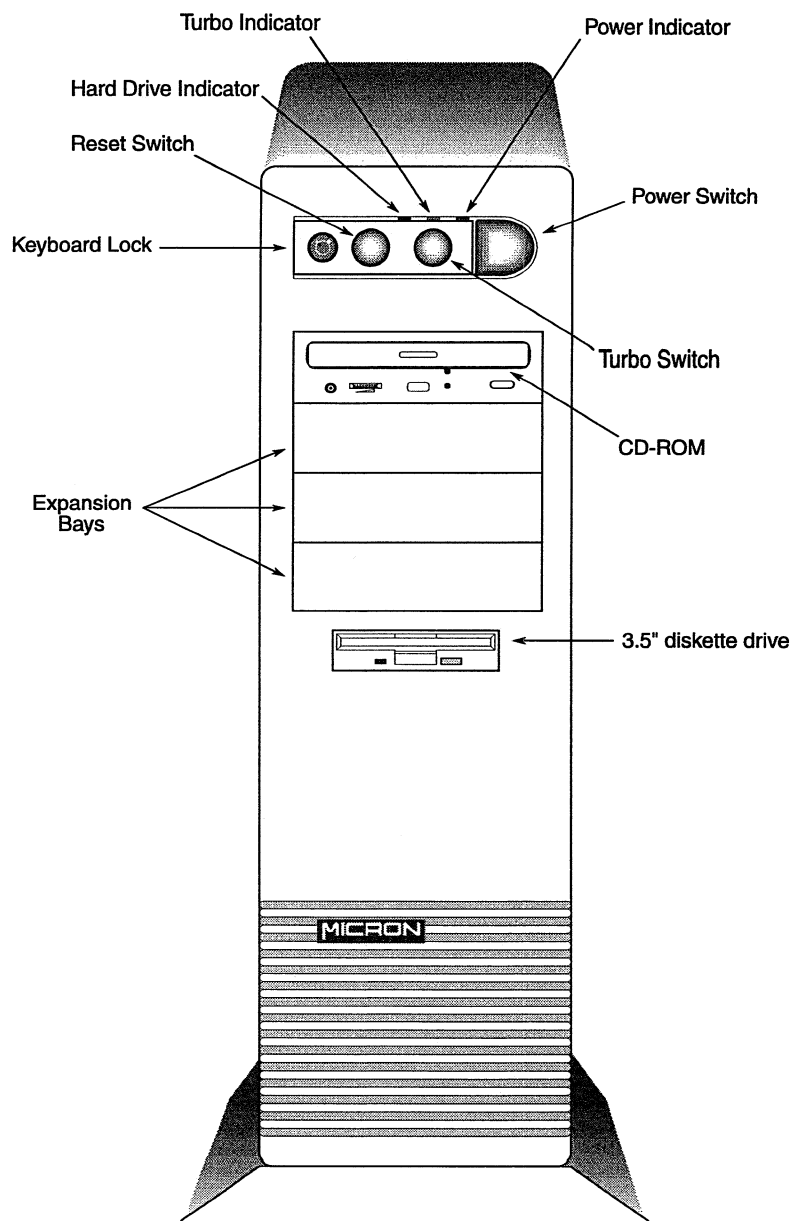


Figure 1-5. Tower Front Case

Chapter 1: Setting Up Your System

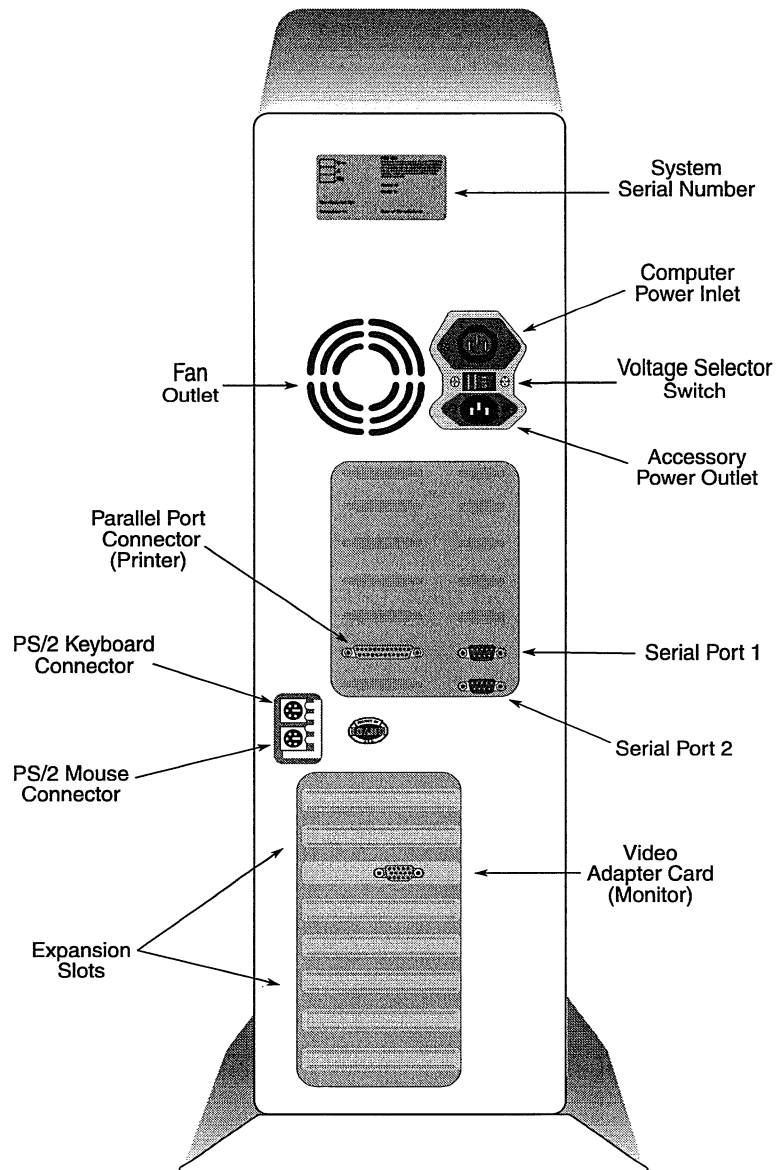


Figure 1-6. Tower Rear Case

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Insert the end of the keyboard cable into the keyboard socket at the rear of the computer system. Take care, for the socket is keyed in such a way that the plug can only be inserted if oriented correctly. ***If it does not plug in easily, do not force it.***

Your system should now be ready to use. You may have other devices or peripherals to install, but it is best to make sure that the basic system is operating correctly before adding any options.

Running Your System for the First Time

First, power up the monitor. If you are unsure about how to go about this, please refer to the monitor's manual for more information.

Be sure no floppy disks are in any of the floppy drives. Power up the computer system by firmly pushing the "Power" button on the front panel of the system. The power LED should light up and you should hear the fan and hard drive begin to run.

The system diagnostics should begin at this time. The keyboard will be initialized (indicated by the keyboard LEDs lighting briefly then extinguishing, except for the Num Lock light which will remain on). Next, the screen should initialize and a message should appear indicating what type of video adapter is installed.

At this point, the memory will be counted and tested.

Finally, the DOS operating system is booted. For more information about DOS, please refer to the provided DOS manual.

If you experience any problems during the power up sequence, please refer to the Troubleshooting section of this manual.

Turning Off Your System

It is recommended that you power down your system in the following order:

Exit all applications you are running, INCLUDING Windows. Save any changes. Make sure that ALL disk activity has completely stopped.

The floppy and hard drive indicator lights should be off and the floppy drive motors should be stopped (hard disks continue to spin until the system power has been shut off and is self-parking).

Turn off the computer system, then the monitor.

Maintenance

Operating Environment

Your Micron computer has been manufactured to the highest standards. With proper care, it should provide years of trouble-free service.

To ensure that your system has the longest life possible, it should be placed in an area with good ventilation and low humidity, out of direct sunlight and away from heat sources or lamps. Be sure the rear cooling fan opening is free of obstruction to keep the system cool. Never expose the system to moisture of any sort, for this could lead to fire or shock hazard. Stay away from areas with high levels of dust, dirt, or smoke.

Transporting

Always shut the system completely off before moving it. Any sudden jar or shock may permanently damage the hard drive. Hard drives are more resistant to shock if they are shut down and are self-parking.

If you are transporting the system over a distance, it is a good idea to completely repack it in its original packing material. If the original packing is unavailable, pack all components with as much padding as reasonably possible to ensure the units are not exposed to excessive vibration or shock.

Cleaning

If the system unit becomes dirty through constant use or handling, clean it with a damp, dust-free cloth. Do not use abrasives or solvents as these may mar or scratch the case. Window cleaner and a cloth may be used to clean the monitor, but only if the monitor has been turned OFF first. Never apply the window cleaner directly to the monitor screen. Always spray the cloth first, then wipe down the screen.

Cleaning kits designed to clean floppy drives are available from most computer stores and should be used periodically.

If you are operating your system in an environment heavy with smoke or dust, you should occasionally open the unit and WITH GREAT CARE clean the components with a vacuum (special vacuums are available just for this purpose). Be careful to not loosen any of the components.

If liquid is spilled into the keyboard, immediately unplug the keyboard, allow the fluid to drain out by tipping it upside down, and dry the keyboard overnight before using it again.

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Protecting

Problems with the electrical supply are notorious for causing system failures. To prevent normal electrical problems, such as spikes or surges, a power surge/filter should be installed between the power outlet and ALL of the connected components. If even one component is not protected, the entire system could be at risk.

If a severe storm system enters your area, completely unplug the entire system from all electrical sources, including phone lines. Lightning can travel in on any line and destroy all connected components.

If possible, do not turn the system on and off frequently. This stresses the power supply and may shorten the life of some components. If the system needs to be restarted, use the reset button located at the front of the system unit. However, if the hard drive is active **DO NOT RESET THE SYSTEM** or data loss will most certainly occur. If you use the Power Switch to restart the system, be sure the hard drive has come to a complete stop before reapplying the power.

Backing Up

Even with today's technology, data loss can occur at any time. We cannot stress enough that you should backup often. There are a large number of backup alternatives available on the open market, from floppy drive backup systems, to tape backup systems, and optical backup systems. Any of these alternatives are highly recommended as long as some method is used. Complete, frequent backups can save years of data from total and irretrievable destruction. If you require additional information about backup systems or options, please contact Micron Computer, Inc.

Chapter 2

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Overview

Micron's PowerStation system board is a high-performance system board designed to be the basis for your personal computer or workstation. The P90PCI is based on the PCI local bus and the PCI chip set.

Intel's PCI chip set allows for improved integration and higher performance for the CPU. The chip set includes the PCMC chip, LBX chip, and the SIO chip.

Memory

The PowerStation system board has three banks of DRAM (six sockets), which provides 192MB maximum memory using on-board SIMMs. The SIMMs include 256K x 36 (1MB) through 8M x 36 (32MB). The P90PCI also has 256K of write-back cache installed on-board. There is an optional 512K secondary level cache available.

P90PCI Features

- ◆ Baby AT footprint form factor (13.25" X 8.5").
- ◆ Four ISA slots, two PCI local bus slots, and one ISA/PCI slot.
- ◆ On-board Super I/O controller (SMC 665).
- ◆ Intel's 82430 PCI chip set.
- ◆ On-board peripherals including two serial ports, one parallel port, one floppy connector, and two IDE Interfaces.
- ◆ Phoenix Flash EPROM BIOS.

Software Compatibility

The PowerStation system boards are tested thoroughly under a variety of software packages. A sampling of programs include products by Microsoft, Novell, IBM, and Santa Cruz Operations.

PCI Chip Set

The PowerStation system implements Intel's PCI Peripheral Component Interconnect chip set. The chip set allows for better integration and higher performance from the CPU.

The Intel PCI chip set consist of four chips:

- ◆ S82434NX PCI/Cache/Memory Controller (PCMC).
- ◆ Two, 82434NX Local Bus Accelerators (LBX).
- ◆ 82378ZB System I/O (SIO).

Each component performs separate tasks, but all work dependently together. The components work as memory, provide second level cache control, and operate as a bridge between the Host bus and the PCI bus. Refer to page 2-4 for a simplified diagram of the PCI chip set.

PCMC Chip

The PCMC functions include a cache controller, main memory controller, and a Host/PCI bridge. The chip's cache controller supports both write-through and write-back cache. The PCMC is also ideal for the 64-Bit Pentium processor at 90MHz.

The PCMC has a dual-ported architecture, which permits concurrent operations on the PCI bus and the Host bus. The dual-port main memory controller interfaces the DRAM with the Host bus and the PCI bus.

The PCMC works in tandem with the LBX chips. Together, they work as a full-function, dual-port data path that connects the main memory and forms a PCI bridge to the Host subsystem. The component also controls data flow through the LBX.

LBX Chips

There are two LBX chips located on the PowerStation system board. Each chip provides a 32-bit data path connection between the host CPU and the main memory, plus a 32-bit data path between the CPU and the PCI Bus. The components also integrate three write-posting buffers and two read-prefetch buffers. These buffers increase PCI Master and Pentium processor performance.

The LBX also has a dual-ported architecture, which permits concurrent operations between the Host bus and the PCI bus. The components provide the address paths and bus controls during bus operations for the Host bus, main memory and PCI bus.

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Diagram of the PCI Chip Set

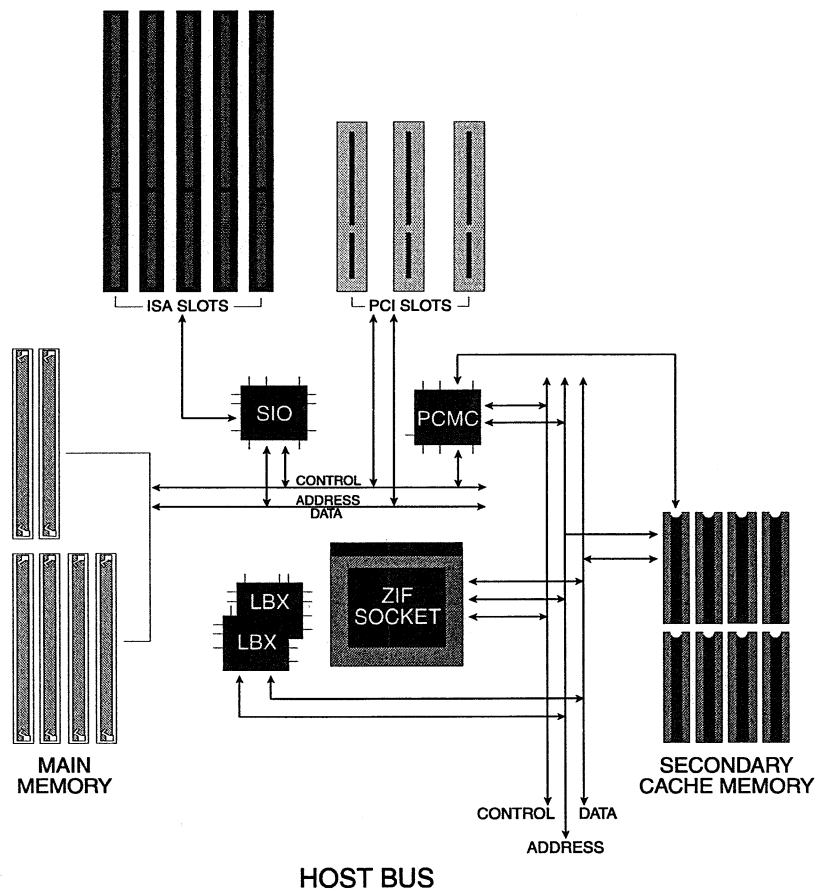


Figure 2-1. PCI Chip Set

SIO Chip

The S82378ZB System I/O (SIO) chip acts as a bridge between the PCI bus and the ISA bus. This multi-faceted component incorporates several functions, including:

- ◆ Logic for a PCI interface (master and slave).
- ◆ ISA interface (master and slave).
- ◆ Enhanced seven channel DMA controller.
- ◆ Data buffers to isolate the PCI bus from the ISA bus.
- ◆ PCI and ISA arbitration.
- ◆ 14 level interrupt controller
- ◆ Three programmable timer/counter.
- ◆ Integrated BIOS timer.
- ◆ Non-maskable-interrupt (NMI) control logic.

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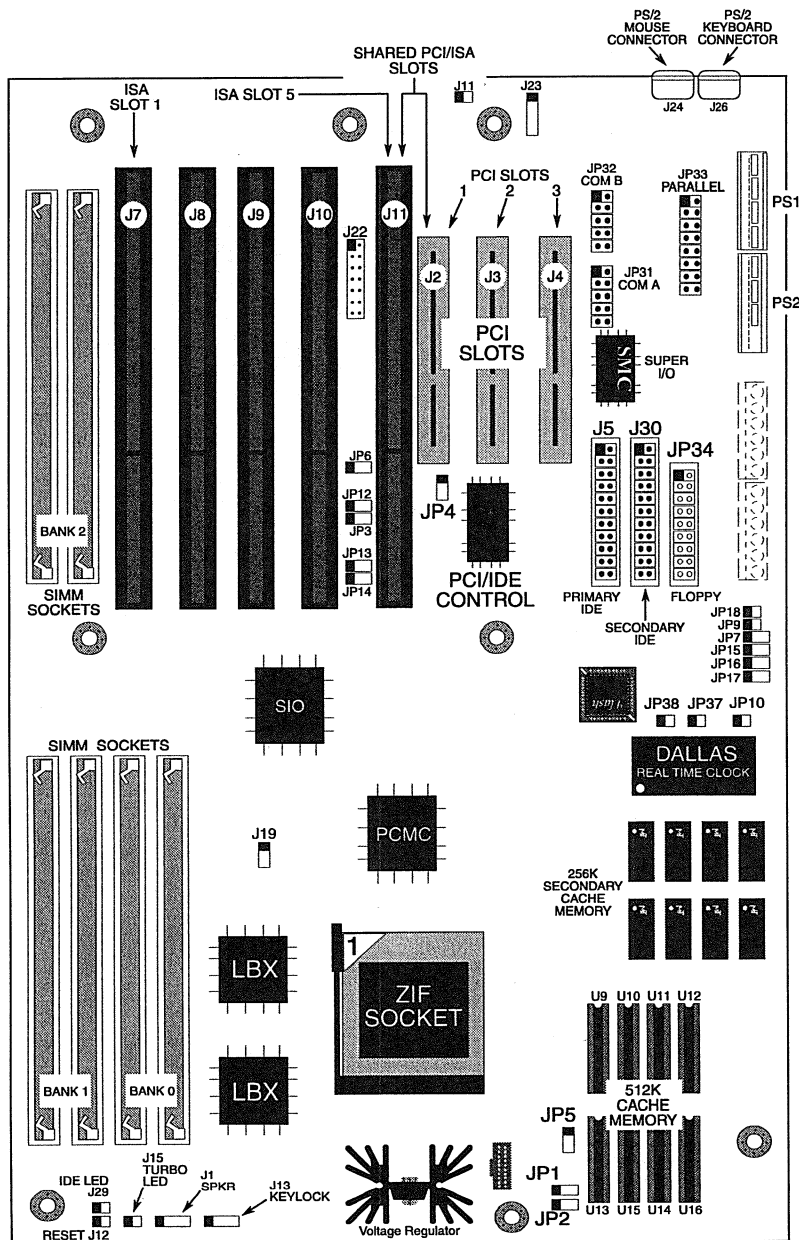


Figure 2-2 PowerStation System Board

Chapter 2: Technical Information

Configuration

There are jumpers on the Micron system board that have to be set before the board is installed into the computer. Setting the jumpers allows various functions on the system board to be configured. Figure 2-3 shows an example of a Jumper and a Jumper Block.

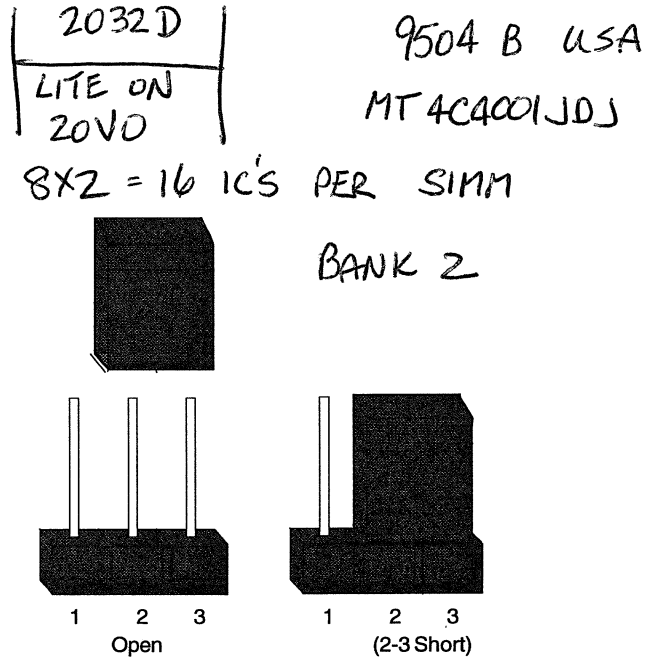


Figure 2-3. Example of a Jumper and Jumper Block

MOTHER BOARD

72p (E00) Fast Page
70NS

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Setting The Jumpers

Refer to the following table to set the jumpers.

Jumper	Function	Pins
JP1	CPU speed selection 90 Mhz	1-2
JP2	Host bus frequency select 2/3 (default) Host bus frequency select 1/2	1-2 or not installed 2-3
JP3	Primary IDE IRQ 14 for PCI IDE (default) Primary IRQ 15 for PCI IDE	1-2 2-3
JP4	PCI IDE Enable (default) PCI IDE Disable	open short
JP5	Second cache bank select 256K Second cache bank select 512K	2-3 1-2
JP6	Keyboard SMI:SIO-SMI Keyboard SMI:IRQ 10	1-2 2-3
JP7	Normal BIOS Mode BIOS Recovery Mode	1-2 2-3
JP9	Write protect for the BIOS, READ only Write protect for the BIOS, READ/WRITE	open short
JP10	Clear RTC Normal operation	short open
JP11	Mono monitor Color monitor	open short
JP12	Secondary IDE select IRQ 14 Secondary IDE select IRQ 15 (default)	1-2 2-3
JP13 and JP14	Secondary IDE select DMA channel 6 Secondary IDE select DMA channel 7	1-2 2-3
JP15 and JP16	ECP mode on parallel port DMA channel 1 ECP mode on parallel port DMA channel 3	1-2 2-3
JP17	Parallel port select IRQ 7 Parallel port select IRQ 5	1-2 2-3
JP18	Super I/O chip SMC665 Enable Super I/O chip SMC665 Disable	open short
JP19	Second cache bank select 256K Second cache bank select 512K	1-2 2-3
JP36	Host CLK select 90 Mhz Host CLK select 100 Mhz	short open
JP37	Host CLK select 90 Mhz Host CLK select 100 Mhz	open short
JP38	Host CLK select 90 Mhz Host CLK select 100 Mhz	short open

Figure 2-4 Jumper Settings

Setting The Jumpers (cont'd)

Refer to the following table to set the peripheral and case connections.

Jumper	Function	Pins
J1	Speaker Connector	1-Power LED; 2-N/C; 3-Ground; 4-(+)5V DC
J5	PCI IDE Connector (primary)	
J13	Power LED/Keylock	1-Power LED; 2-N/C; 3-Ground; 4-KeyBd LCK; & 5-Ground
J15	Turbo LED	
J23	External PC/AT Keyboard Connector	
J24	PS/2 Mouse Connector	
J26	PS/2 Keyboard Connector	
J29	On-Board IDE LED	
J30	ISA IDE Connector (secondary)	
J31	Serial Port A	Can be disabled at the CMOS configuration screen.
J32	Serial Port B	Can be disabled at the CMOS configuration screen.
J33	Parallel Port	
J34	Floppy Connector	

Figure 2-5 Peripheral and Case Connections.

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Installing Add-on Peripherals

The PowerStation accommodates ISA and PCI Local Bus cards. Extra DRAM and secondary cache memory can also be added to the system board. The following describes how to install the PCI card, SIMMs (memory), and SRAM memory.

PCI Local Bus Card

PCI Local Bus slots accommodate most PCI-approved Local Bus cards. To install a PCI Local Bus card:

- ◆ Power OFF the computer system.
- ◆ Locate an unused PCI slot on the P90PCI.
- ◆ Insert the card with the bottom edge level. Never insert the card at an angle.
- ◆ Holding the card at the center of the top edge, gently push straight in. Do not force the card into place. If it does not fit, take it out and try again.
- ◆ Make sure the card is fully inserted.
- ◆ Secure the card with a bracket screw.

PCI Local Bus Card (Cont'd)

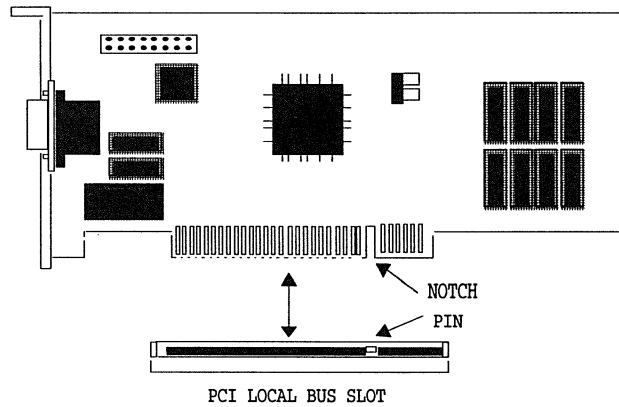


Figure 2-6 Installing a PCI Local Bus Card

NOTE: The ISA slot J11 and the PCI slot J2 are “shared slots.” When a PCI card is installed into the J2 PCI slot, the J11 ISA slot is Disabled. Conversely, when a peripheral card is installed into the J11 ISA slot, the J2 PCI slot is disabled.

SIMM Modules

The memory in this system can be increased up to a maximum of 192MB by installing SIMMs (Single In-line Memory Modules). To install SIMMs, first locate the memory banks on the system board (refer to Figure 2-2). Follow Table 2-7 on page 2-13 for the possible installation combinations.

CAUTION: Modules are Electrostatic Sensitive.

Even a small electrostatic discharge could damage the module. A damaged module might not fail immediately, but over time it will become worse, possibly causing an "intermittent" problem. Be very careful to handle the boards **ONLY** by the edges. **DO NOT** touch the gold/silver edge-connectors or any of the components on the board. Leave the module in the antistatic bag until ready for installation.

1. Switch the computer off. Leave the computer plugged in to the outlet to provide an electrical ground to discharge static electricity.
2. With your finger, touch the metal case of the power supply or the metal lining inside the computer case. This will drain the static charge from your body and will keep the modules from being electrically damaged.
3. Keep body movement to a minimum as you remove and handle the modules.
4. Antistatic wrist straps with clip-on ends are commercially available.

Installing SIMM Modules . . .

The PowerStation has six, 36-bit (72-pin) SIMM sockets on-board and can accommodate memory from 8MB up to 192MB using the following SIMM sizes:

- ◆ 4MB- organized as 1MB x 32 or 1MB x 36
- ◆ 8MB- organized as 2MB x 32 or 2MB x 36
- ◆ 16MB- organized as 4MB x 32 or 4MB x 36
- ◆ 32MB- organized as 8MB x 32 or 8MB x 36

The system board requires at least two SIMM sockets (one bank) to be filled. Start with bank 0, then work your way up. The SIMMs must be rated at 70ns or faster.

Bank 0 must always be filled and contain two identically sized SIMMs.

- ◆ Bank 1, if filled, must contain the same size SIMMs.
- ◆ Bank 2, if filled, must contain the same size SIMMs.

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Installing SIMM Modules (Cont'd)

Step 1: Using both hands, carefully set the SIMM into the socket at a **45 degree angle**, tilted towards the ISA slots (refer to Figures 2-3 and 2-4). Do not force it in or damage may result. Note that the SIMM modules are keyed in such a way that they cannot be inserted incorrectly (refer to Figure 2-5 on page 14). If you are having difficulty placing them into the socket, check to see that you are not attempting to insert them backwards.

Do not lock the module into position at this time.

Step 2: Check to make sure the module is centered in the socket, and that the connector pins of the module line up with the socket connector pins.

A) Be sure the module is centered and connector pins are aligned.

B) When the module is locked in place, be sure both silver locking tabs (on the ends of the socket) are locked properly.

Step 3: Using both hands and applying equal pressure on each end of the module, lock the module into the socket by pushing forward. Make sure both locking tabs have seated properly. The module should now be standing upright in the socket.

WARNING: Failure to observe proper insertion guidelines may result in damage to the SIMM and/or the socket.

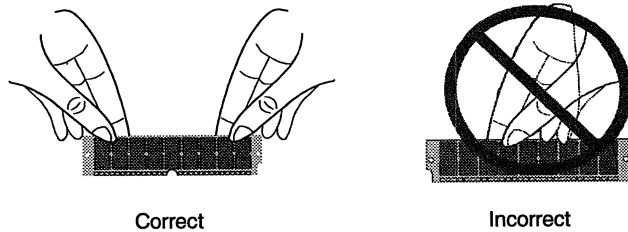


Figure 2-7.

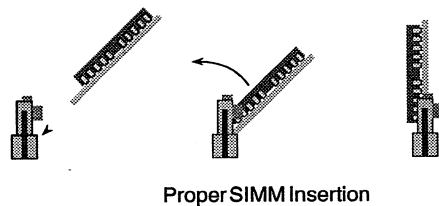


Figure 2-8.

Installing SIMM Modules (cont'd)

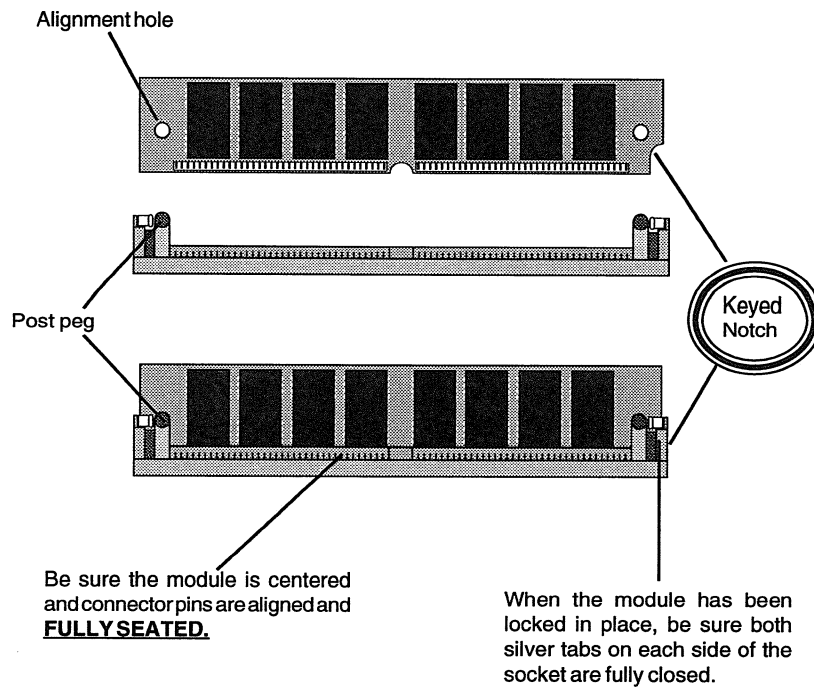


Figure 2-9. SIMMs with Keyed Notch

Removing SIMM Modules

To remove SIMM modules, simply reverse the above procedure with the following differences: Using the thumbs of both hands, gently pry the locking tabs apart so they no longer hold the module in the socket. While holding the tabs apart, gently pull the module backward to clear the tabs (this should put the module at an angle to the socket). Carefully remove the loose module from the socket.

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DRAM Memory

The following table lists the possible memory size combinations usable for the installation of SIMMs.

Bank 0	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Total
4MB	4MB					8MB
4MB	4MB	4MB	4MB			16MB
4MB	4MB	4MB	4MB	4MB	4MB	24MB
8MB	8MB					16MB
4MB	4MB	8MB	8MB			24MB
8MB	8MB	8MB	8MB			32MB
4MB	4MB	4MB	4MB	8MB	8MB	32MB
4MB	4MB	8MB	8MB	8MB	8MB	40MB
8MB	8MB	8MB	8MB	8MB	8MB	48MB
16MB	16MB					32MB
4MB	4MB	16MB	16MB			40MB
8MB	8MB	16MB	16MB			48MB
16MB	16MB	16MB	16MB			64MB
4MB	4MB	4MB	4MB	16MB	16MB	48MB
4MB	4MB	8MB	8MB	16MB	16MB	56MB
4MB	4MB	16MB	16MB	16MB	16MB	72MB
8MB	8MB	16MB	16MB	16MB	16MB	80MB

Figure 2-10. DRAM Memory Configuration

DRAM Memory (cont'd)

Bank 0	Bank 0	Bank 1	Bank 1	Bank 2	Bank 2	Total
16MB	16MB	16MB	16MB	16MB	16MB	96MB
32MB	32MB					64MB
4MB	4MB	32MB	32MB			72MB
8MB	8MB	32MB	32MB			80MB
16MB	16MB	32MB	32MB			96MB
32MB	32MB	32MB	32MB			128MB
4MB	4MB	4MB	4MB	32MB	32MB	80MB
4MB	4MB	8MB	8MB	32MB	32MB	88MB
4MB	4MB	16MB	16MB	32MB	32MB	104MB
8MB	8MB	8MB	8MB	32MB	32MB	96MB
8MB	8MB	16MB	16MB	32MB	32MB	112MB
16MB	16MB	16MB	16MB	32MB	32MB	128MB
4MB	4MB	32MB	32MB	32MB	32MB	136MB
8MB	8MB	32MB	32MB	32MB	32MB	144MB
16MB	16MB	32MB	32MB	32MB	32MB	160MB
32MB	32MB	32MB	32MB	32MB	32MB	192MB

Figure 2-11. DRAM Memory Configuration

Installing Cache Memory

The PowerStation comes standard with 256K of secondary cache installed on-board. Another level of cache can be installed to provide 512K of secondary cache memory.

512K of Secondary Cache

To add an additional 256Kbytes of secondary cache; install eight, 32KX8-15ns (or faster) 3.3V SRAMs into sockets U9 through U16. After installing the cache, refer to Figure 2-3 for the correct jumper settings.

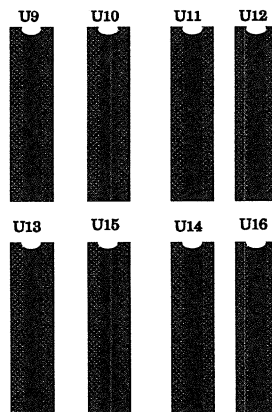


Figure 2-12 Installing 512K of Secondary Cache

Chapter 3

The BIOS Setup Program

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SETUP

BIOS Setup

Every AT-compatible computer has a battery supported CMOS memory location that stores information about the system and peripheral configuration. Because of the attached battery, the CMOS is constantly provided with power, even when the computer has been turned off.

During the boot sequence, a special software application called the BIOS (Basic Input Output System), which is located in read-only (ROM) memory on the system board, reads the information contained in the CMOS and configures the CPU and other peripheral devices. If the CMOS information is incorrect, the system may not operate correctly until accurate information is stored in the CMOS. The Setup Program has been built into the system to provide the means for changing the CMOS.

When Setup Should Be Run

Although the Micron PowerStation arrives fully configured, the system may need to be adjusted to fit your needs.

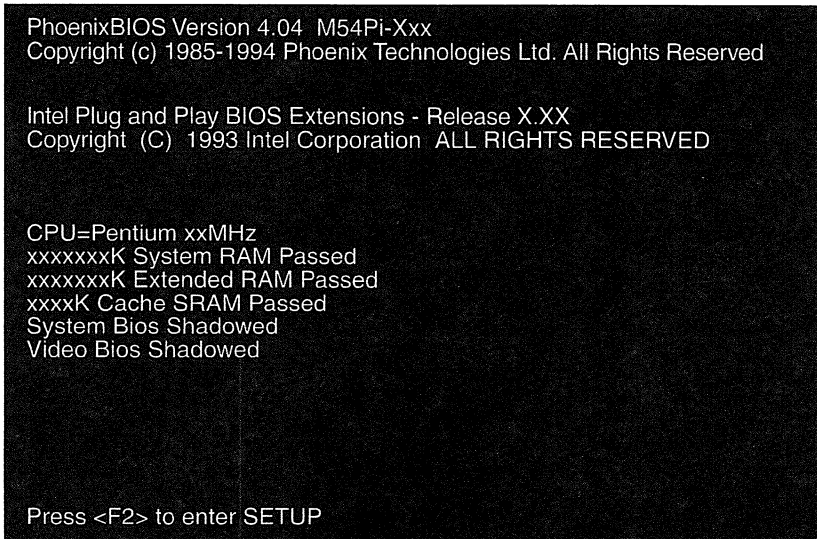
Whenever peripherals are added or removed from the system (for example, if you add a hard disk or more memory), you must run Setup to inform the system about the new configuration.

If the information in CMOS is lost, the system will not operate properly unless Setup is used to restore the system configuration.

Chapter 3: The BIOS Setup Program

How to Run the Setup Program

The Setup procedure is already built into the system. The Setup Program must be entered during the boot by pressing the F2 key. The screen shown in Figure 3-1 below should appear.



```
PhoenixBIOS Version 4.04 M54Pi-Xxx  
Copyright (c) 1985-1994 Phoenix Technologies Ltd. All Rights Reserved
```

```
Intel Plug and Play BIOS Extensions - Release X.XX  
Copyright (C) 1993 Intel Corporation ALL RIGHTS RESERVED
```

```
CPU=Pentium xxMHz  
xxxxxxxK System RAM Passed  
xxxxxxxK Extended RAM Passed  
xxxxK Cache SRAM Passed  
System Bios Shadowed  
Video Bios Shadowed
```

```
Press <F2> to enter SETUP
```

Figure 3-1 Power-Up Screen

Micron P90PCI PowerStation User's Guide

Running The Setup Procedure

The PowerStation system board has nine CMOS configuration screens:

- ◆ Main Screen
- ◆ IDE Adapter 0 Master and Slave
- ◆ IDE Adapter 1 Master and Slave
- ◆ Memory Cache
- ◆ Memory Shadow
- ◆ Boot Options
- ◆ Warning
- ◆ Integrated Peripherals
- ◆ Security

Each screen configures specific parameters for the PowerStation system board. The following section is an overview of each screen and their functions.

Chapter 3: The BIOS Setup Program

MAIN SCREEN

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
Main	Advanced	Security	Exit
System Time: [10:02:38]		Item Specific Help	
System Date: [10/21/94]		<Tab>, <Shift-Tab>, or <Enter> selects field.	
Diskette A: [1.44 MB, 3½"]			
Diskette B: [Not Installed]			
▶ IDE Adapter 0 Master (C: 730 Mb)			
▶ IDE Adapter 0 Slave (None)			
▶ IDE Adapter 1 Master (None)			
▶ IDE Adapter 1 Slave (None)			
Video System: [EGA / VGA]			
▶ Memory Cache			
▶ Memory Shadow			
▶ Boot Sequence: [A: then C:]			
System Memory: 640 KB			
Extended Memory: 15 MB			
F1 Help ↑ ↓ Select Item -/+ Change Values F9 Select Defaults ESC Exit ← → Select Menu Enter Select ▶ Sub-Menu F10 Previous Value			

Figure 3-2 Main Screen

System Time and Date

To set the time, use the <-> key to decrease the number; use the <+> key to increase the number. To move the prompt forward, use the tab key; to move the prompt backward, use the shift-tab key.

Follow the same procedure for the date.

Diskette A or B

This allows you to configure a diskette drive added or removed from your computer. Use the <+> or <-> keys to toggle between the options.

Micron P90PCI PowerStation User's Guide

IDE Adapter 0 Master or Slave

This parameter allows you to configure a hard disk to the primary PCI IDE connector or an off-board controller.

To install most SCSI hard drives, select NONE. To install an ESDI or RLL hard drive, select TYPE 1. To manually configure the hard drive, select USER. Press the arrow keys and type in the appropriate parameters. Drives that have the capability to be Auto-Configured will report its parameters to the BIOS.

IDE Adapter 1 Master or Slave

This parameter allows you to configure a hard disk to the secondary ISA IDE connector. The settings are the same as the IDE Adapter 0 Master or Slave.

See Appendix C for a complete listing of the available hard disk drives for all four selections.

Video System

This sets the type of monitor required for your computer. The Display peripheral will support EGA/VGA, CGA 80 x 25, or MONO (Monochrome).

Memory Cache

This selection allows you to go to the Memory Cache sub-screen (refer to Figure 3-5). This allows you to set the system board's memory cache.

Memory Shadow

This selection allows you to go to the Memory Shadow sub-screen (refer to Figure 3-6) to shadow the system board's memory.

Boot Sequence

This selection also offers a sub-menu so that you can specifically set the system board's boot sequence. Press <ENTER> to go to this sub-menu (refer to Figure 3-7).

The selections for Boot Sequence in the Main Screen include A: THEN C:, C: THEN A, or C: ONLY.

System Memory and Extended Memory

Both of these memory settings are automatically configured. Use the down arrow key to move to the next selection.

Chapter 3: The BIOS Setup Program

IDE ADAPTER 0 MASTER OR SLAVE CONTROL

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
Main		Item Specific Help	
IDE Adapter 0 Master (C: 730 Mb)			
Autotype Fixed Disk:	[Press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.	
Type:	[User] 730 Mb		
Cylinders:	[1416]		
Heads:	[16]		
Sectors/Track:	[63]		
Write Precomp:	[None]		
Multi-Sector Transfers:	[16 Sectors]		
LBA Mode Control:	[Enabled]		
32 Bit I/O:	[Enabled]		
Transfer Mode:	[Enhanced]		
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Select Defaults
ESC Exit	←→ Select Menu	Enter Execute Command	F10 Previous Value

Figure 3-3 IDE Adapter 0 Master or Slave Screen

Autotype Fixed

This selection automatically identifies the type of IDE hard drives that comply with ANSI specifications. Press <ENTER> to continue.

Type

This selection allows you to select the specific fixed drive installed in the system. The options include NONE, USER, and 1 THRU 39.

Micron P90PCI PowerStation User's Guide

Multi-Sector Transfers

This selection determines the number of sectors per block for Multiple Sector Transfers. AUTO refers to the size the disk returns when queried. The selectable options include:

- ◆ Disabled
- ◆ Auto (default)
- ◆ 2 Sectors
- ◆ 4 Sectors
- ◆ 8 Sectors
- ◆ 16 Sectors

LBA Mode Control

This option enables the LBA (Logical Block Addressing) disk addressing. This selection should only be enabled to support IDE drives with more than 1024 cylinders. The selection is either ENABLED or DISABLED (default).

32 Bit I/O

This option enables 32 bit data transfers for faster disk performance.

IDE Transfer Mode

This option selects the transfer modes for the on-board PCI IDE controller. The selectable options include:

- ◆ ENHANCED is equivalent to Mode 3 with a minimum Cycle time of 180 ns (11.1 MB/sec)
- ◆ MODE 2 - minimum cycle time of 240 ns (8.33 MB/sec)
- ◆ MODE 1 - minimum cycle time of 383 ns (5.22 MB/sec)
- ◆ MODE 0 - minimum cycle time of 600 ns (3.33 MB/sec)

Chapter 3: The BIOS Setup Program

IDE ADAPTER 1 MASTER OR SLAVE CONTROL

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.

Main		Item Specific Help
IDE Adapter 1 Master (None)		
Autotype Fixed Disk:	[Press Enter]	Attempts to automatically detect the drive type for drives that comply with ANSI specifications.
Type:	[None]	
Cylinders:		
Heads:		
Sectors/Track:		
Write Precomp:		
Multi-Sector Transfers:	[Disabled]	
LBA Mode Control:	[Disabled]	

F1 Help ↑ ↓ Select Item -/+ Change Values F9 Select Defaults
ESC Exit → ← Select Menu Enter Execute Command F10 Previous Value

Figure 3-4 IDE Adapter 1 Master or Slave Screen

Autotype Fixed Disk

This selection automatically identifies the type of IDE hard drives that comply with ANSI specifications. Press <ENTER> to automatically identify your IDE hard drive.

Type

This selection allows you to select the specific hard drive installed in the system. The options include NONE, USER, and 1 THRU 39.

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Multi-Sector Transfers

This selection determines the number of sectors per block for Multiple Sector Transfers. AUTO refers to the size the disk returns when queried. The selectable options include:

- ◆ Disabled
- ◆ Auto (default)
- ◆ 2 Sectors
- ◆ 4 Sectors
- ◆ 8 Sectors
- ◆ 16 Sectors

LBA Mode Control

This option enables the LBA (Logical Block Addressing) disk addressing. This selection should only be enabled to support IDE drives with more than 1024 cylinders. The selections are either ENABLED or DISABLED (default).

Chapter 3: The BIOS Setup Program

MEMORY CACHE

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.		
Main	Memory Cache	Item Specific Help
External Cache:	[Enabled]	Sets the state of external memory cache.
Cache System BIOS area:	[Enabled]	
Cache Video BIOS area:	[Enabled]	
Cache Memory Regions		
C800 - CBFF:	[Disabled]	
CC00 - CFFF:	[Disabled]	
D000 - D3FF:	[Disabled]	
D400 - D7FF:	[Disabled]	
D800 - DBFF:	[Disabled]	
DC00 - DFFF:	[Disabled]	

F1 Help	↑ ↓ Select Item	-/+ Change Values	F9 Select Defaults
ESC Exit	→ ← Select Menu	Enter Select ► Sub-Menu	F10 Previous Value

Figure 3-5 Memory Cache Screen

External Cache

This selection allows you to enable the external (secondary) cache. The selections are DISABLED or ENABLED (default). For optimum performance, select ENABLED.

Cache Mode

This selection allows you to select the type of secondary cache installed on board. The PowerStation system can utilize either WRITE-THROUGH or WRITE-BACK cache schemes (refer to Figure 2-4 for cache jumper settings). When adding additional cache, make sure the jumpers are set correctly.

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Cache System BIOS Area

Choose ENABLED (default) to cache the system BIOS. This option can also be set to DISABLED.

Cache Video BIOS Area

Choose ENABLED (default) to cache the video BIOS. This option can also be set to DISABLED.

Cache Memory Regions

This section allows you to configure specified blocks of upper memory regions for caching. The selections include ENABLED or DISABLED (default).

Chapter 3: The BIOS Setup Program

MEMORY SHADOW

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.

Main		Item	Specific	Help
Memory Shadow				
System shadow:	Enabled			Video BIOS may be copied to shadow RAM for increased performance.
Video shadow:	[Enabled]			
Cache Memory Regions				
C800 - CBFF:	[Disabled]			
CC00 - CFFF:	[Disabled]			
D000 - D3FF:	[Disabled]			
D400 - D7FF:	[Disabled]			
D800 - DBFF:	[Disabled]			
DC00 - DFFF:	[Disabled]			

F1 Help ↑ ↓ Select Item -/+ Change Values F9 Select Defaults
ESC Exit ← → Select Menu Enter Select ► Sub-Menu F10 Previous Value

Figure 3-6 Memory Shadow Screen

System Shadow

This selection is Enabled by default. This will copy the system BIOS into RAM for faster execution, which allows you to take advantage of the high-speed memory bus.

Video Shadow

Choosing ENABLE (default) allows the system's video BIOS to be copied to shadow RAM for increased performance. Some video cards cannot be shadowed, in which case this selection must be set to DISABLED.

Shadow Memory Regions

This section allows you to "Shadow" certain memory regions on the system board. Shadow memory can not be cached for any of the regions.

Micron P90PCI PowerStation User's Guide

BOOT OPTIONS

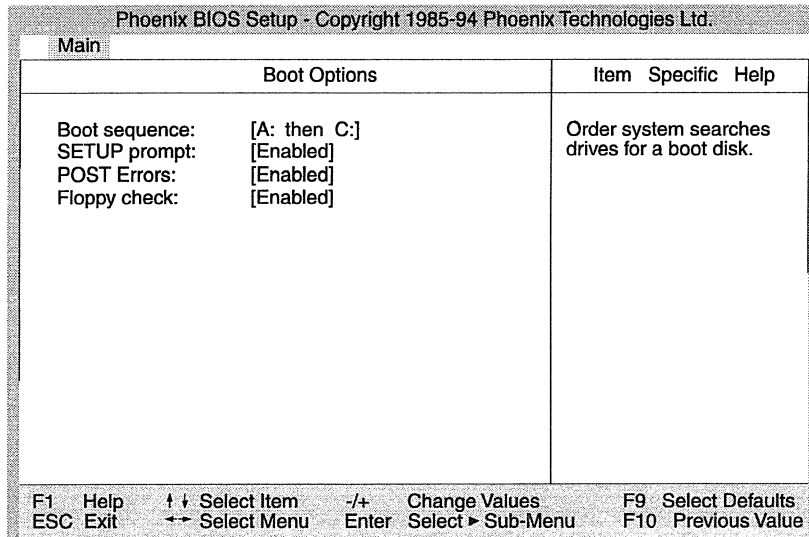


Figure 3-7 Boot Options Screen

The Boot Option Screen can be entered through the CMOS Main screen.

Boot Sequence

This selection specifies the system board's boot sequence. The options include A: THEN C:, C: THEN A, or C: ONLY. This selection can also be set in the CMOS Main screen.

Setup Prompt

When selected to ENABLED (default), the system will display the following message upon boot-up: "Press <F2> to enter SETUP." Select DISABLED to deactivate the message. DISABLED does not prevent entry into the Setup screens.

Chapter 3: The BIOS Setup Program

Post Errors

When set to ENABLED (default), the system will display the following message upon an error on boot-up: "Press <F1> to continue or <F2> to SETUP." Select DISABLED to deactivate the message. If the message is deactivated, the system will always attempt to boot.

Floppy Check

When set to ENABLED, the system will verify the floppy-type upon boot-up. Select DISABLED (default) to deactivate the message and speed up boot-up.

Summary Screen

When set to ENABLED (default), the system will display the system configuration. Select DISABLED to deactivate the message and speed up boot-up.

Micron P90PCI PowerStation User's Guide

WARNING SCREEN

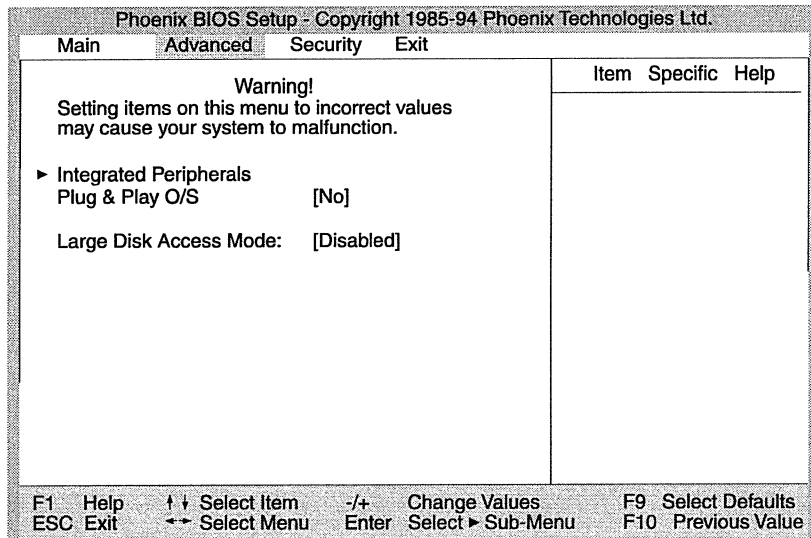


Figure 3-8 Warning Screen

Integrated Peripherals

This selection allows you to enter a sub-menu to configure options for the on-board I/O devices. Press <ENTER> to activate the sub-menu.

Plug & Play O/S

This selection should be set to "Yes" if you are using a Plug & Play capable operating system.

Large Disk Access Mode

When this selection is set to ENABLED, it will provide different geometries for various operating systems other than DOS. Set this to DISABLED (default) for the DOS operating system.

Chapter 3: The BIOS Setup Program

INTEGRATED PERIPHERALS

Phoenix BIOS Setup - Copyright 1985-94 Phoenix Technologies Ltd.		
Advanced		
Integrated Peripherals		Item Specific Help
Serial Port A:	[COM1, 3F8h]	Set COM port address.
Serial Port B:	[COM2, 2F8h]	
Parallel Port:	[LPT1, 378h]	
Parallel Port Mode:	[AT]	
Diskette controller:	[Enabled]	
ISA IDE controller:	[Disabled]	
Integrated IDE controller:	[Enabled]	

F1 Help	↑ ↓ Select Item	-/+ Change Values	F9 Select Defaults
ESC Exit	→ ← Select Menu	Enter Execute Command	F10 Previous Value

Figure 3-9. Integrated Peripherals Screen

Serial Port A

This selection allows you to choose one of the two available COM ports for use as a serial device. The options include: COM1, COM3, and DISABLED. IRQ 4 is used when set to COM1 or COM3.

Serial Port B

This selection allows you to choose one of the two available COM ports for use as a serial device. The options include: COM2, COM4, and DISABLED. IRQ 3 is used when set to COM2 or COM4.

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Parallel Port

This selection allows you to choose the available parallel port. The options include: LPT1, LPT2, and DISABLED.

Parallel Port Mode

This selection puts the parallel port to output mode only or bi-directional mode. Select AT (default) for output mode or PS/2 for bi-directional mode.

Diskette Controller

This selection enables or disables the on-board floppy controller. The options are ENABLED (default) or DISABLED.

IDE Controller

This selection enables or disables the on-board SMC665 ISA IDE controller. The options are ENABLED (default) or DISABLED.

ECP

This selection enables or disables the Extended Capabilities Parallel Port. The options are ENABLED or DISABLED (default) .

SECURITY



This section of the BIOS allows a supervisor to enter their own password. The password will take effect only after the system is rebooted. Entering a blank password will disable it.

This section of the BIOS allows you to enter your own password. The password will take effect only after the system is rebooted. Entering a blank password will disable it.

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Set Supervisor Password

This selection activates the supervisor's password. Press the <ENTER> key to setup the password.

Set User Password

This selection activates the users' password. Press the <ENTER> key to setup the password. This selection can only be activated by the supervisor when the supervisor password is available.

Password on Boot

This selection allows you to enable or disable the password upon boot-up. The options are ENABLED or DISABLED (default).

Diskette Access

This selection allows diskette access with an option of the supervisor or user. The options are SUPERVISOR or USER (default).

Fixed Disk Boot Sector

This selection allows the boot sector of the fixed disk to be write-protected. The options are WRITE PROTECT or NORMAL (default).

Chapter 3: The BIOS Setup Program

EXIT

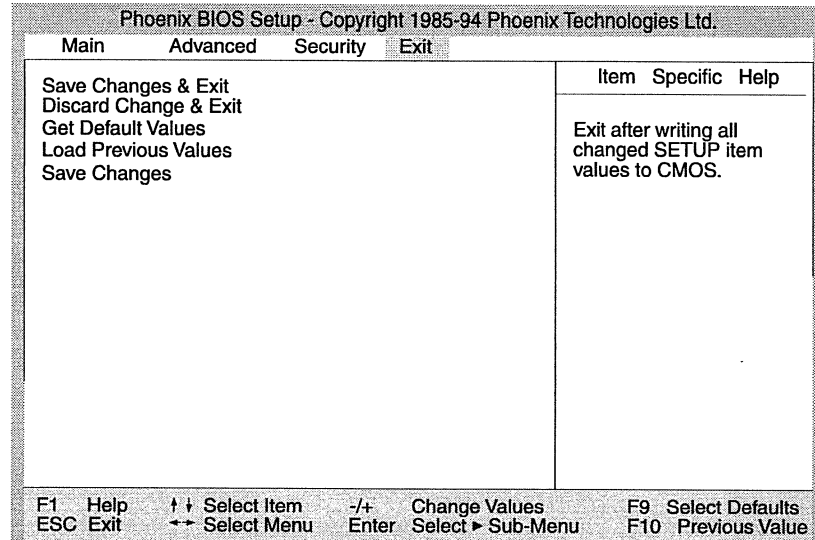


Figure 3-11. Exit Screen

Save Changes & Exit

This section saves your changes, exits the setup, and reboots the computer with the new changes to BIOS.

Discard Change & Exit

This section will ignore all changes you have made to the screens, exits the setup and reboots the computer using the previous CMOS settings.

Get Default Values

Loads all factory default values for all setup items, exits the setup and reboots the computer using the factory default values.

Load Previous Values

Loads previous values from CMOS for all setup items, exits the setup and reboots the computer.

Save Changes

Writes all BIOS settings to CMOS, exits the setup and reboots the computer with the new BIOS values.



Chapter 4

Common Problems

Introduction	2
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Hard Disk Problems	3
System Problems	5

Introduction

Occasionally while setting up and configuring a computer system, an error may occur or an important element may be forgotten. This section provides information regarding the most frequently encountered problems, as well as many quick and simple solutions. If you continue to experience problems and this section fails to provide solutions, please feel free to contact Micron technical support (see Appendix A: Contacting Technical Support).

Problems During Boot

Problem

When the power switch is turned on, the system does not power up (i.e. the exhaust fan does not run, the power indicator light is not illuminated, the hard disk does not begin to spin, etc.).

Possible Cause

- The power cable is unplugged or defective.
- Voltage switch is improperly set.
- No power at outlet.
- Bad power supply.

Solution

- Check to ensure the power cable is plugged in correctly and firmly. Try a second power cable, if available, or test the cable for continuity. Replace original cable if it is found to be defective.
- Check the red voltage switch (located at the rear of the unit near the fan) and ensure that it is set for the proper voltage (115V in the U.S. and Canada).
- Check the outlet with another appliance (e.g. a lamp).

Chapter 4: Common Problems

Problem

When the power switch is turned on, the system has power (i.e. the exhaust fan runs, the power indicator light is illuminated, the hard disk begins to spin, etc.), but the system appears dead. Generally the keyboard LEDs will stay on.

Possible Cause

- The monitor may not be turned on.
- A peripheral card may not be seated correctly on the system board.
- A peripheral card may be defective.
- A floppy drive may be defective.

Solution

- Check the monitor to ensure that the power is on. If you suspect a problem with the monitor, please refer to the manual that was provided with it.
- Carefully open the system unit. Press down firmly on all peripherals in the expansion slots.
- With the system power shut off, remove one peripheral card, power up the system, and wait a few moments to see if the keyboard lights turn off. If they don't turn off, repeat the above steps with the next peripheral card until all have been removed. After this has been completed, contact Micron technical support for further assistance.
- With the system power shut off, completely disconnect one of the floppy drives and power up the system. If the keyboard lights do not turn off after a few moments, repeat the above procedure until all drives are disconnected. After this has been completed, contact Micron technical support for further assistance.
- Contact Micron technical support if none of the above procedures are effective.

Hard Disk Problems

Problem

System has to be booted from a floppy disk. Hard drive is either unrecognized or unreadable.

Possible Cause

- The connections between the drive and the controller may be defective or loose.
- The hard drive's root directory or file allocation table may be corrupted. The controller or hard drive may also be defective.

Solution

- Check that the hard drive and controller are connected properly.

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Solution(cont)

- If hard drive recovery software is available, use it to repair the damage. The only other solution is to attempt a high-level (DOS) format on the drive. ***Do not attempt to low-level format the drive!*** If the drive cannot be formatted, either the drive or the controller may be defective. Contact Micron technical support.

Problem

System has to be booted from a floppy disk. Hard disk is completely functional, but cannot be used for boot-up.

Possible Cause

- The hard drive's boot sector may have become corrupted.

Solution

- If hard drive recovery software is available, attempt to use it to repair the damaged boot sector. The only other solution is to attempt a high-level (DOS) format on the drive and transfer the DOS system to the boot sector. ***Do not attempt to low-level format the drive!*** Backup of your data before formatting your drive.

Problem

Read/write, sector, data, or seek errors occur when attempting to access files on the hard drive.

Possible Cause

- The format may be fading.
- The hard drive may be developing media errors.
- The file allocation table may be corrupted.

Solution

- Using a file-by-file backup method, backup as much data as you can, then reformat the drive. If the format is successful, use a disk diagnostic software application to test the media of the drive (make sure the application locks out any errors it finds to make them inaccessible from DOS). Finally, restore your files from the backup tape or diskettes.

System Problems

Problem

After installing a new peripheral card, an unrelated part of the system suddenly stops working.

Possible Cause

- The new card may be attempting to use some of the same system resources, such as address space, I/O ports, interrupt lines, etc., and may be in conflict with the failing part of the system.

Solution

- Most peripheral cards have jumpers or switches that configure the card to use different I/O ports, interrupt lines, or address regions. Please refer to the documentation that was provided with the new card and try to change the settings to eliminate the conflict.

Problem

A large number of damaged sectors are encountered when attempting to format diskettes.

Possible Cause

- Typically, Micron computers are provided with 1.2MB 5.25" and 1.44MB 3.5" floppy drives. An attempt may have been made to format a low-density disk in one of the Micron high-density floppy drives.

Solution

- Please refer to the DOS manual for more information about how to format low-density diskettes in high-density floppy drives.



Chapter 5

Mouse User's Guide

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Document No. HA 51523-0593

Getting Started

This chapter contains information to help you get started with your mouse.

Checklist of Essentials

You need the following software and hardware to use your mouse:

MS-DOS® version 2.0 or higher

A personal computer and display

The Microsoft Mouse is designed for use with personal computers that are 100-percent compatible with MS-DOS.

Make sure the following items are included in your Microsoft Mouse package:

A Mouse

The Setup disk

This *Mouse User's Guide*

Micron P90PCI PowerStation User's Guide

The README.TXT File

The Setup disk with your mouse includes a file named README.TXT. This file contains information that became available after this book was printed. After you install the mouse software, you can access the README.TXT file from the mouse program group in Microsoft® Windows™. You can also read the file before you run Setup.

To read the README.TXT file from MS-DOS

1. Insert the Setup disk into the disk drive.
2. At the command prompt, specify the disk drive and type **readme**.

For example, type **a:readme** if you're using drive A.

To print README.TXT from MS-DOS

1. Make sure your printer is ready to receive information from the computer.
2. At the command prompt, type

copy a:readme.txt lptn (or **comn**, if you have a serial printer)

where **n** is 1 or 2, depending on your printer.

Radio Interference Information

This device complies with Part 15 of the U.S. Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For more information, see "United States Radio and TV Interference Regulations" at the end of this section.

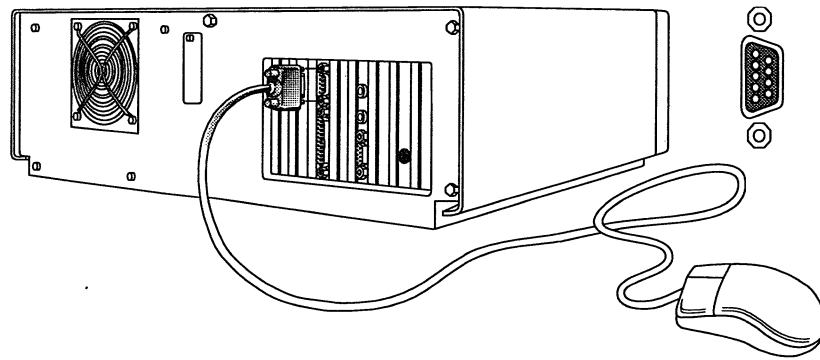
Installing the Hardware

This chapter explains how to connect the mouse hardware. There are two versions of the mouse to accommodate different systems: serial and mouse port (PS/2).

Installing a Serial Mouse

If you have a 9-pin serial mouse (see connector below), connect the mouse to your computer by following the instructions below. Then skip the rest of this chapter and turn to "Installing the Software."

NOTE: Always turn the computer OFF before connecting or disconnecting your mouse.



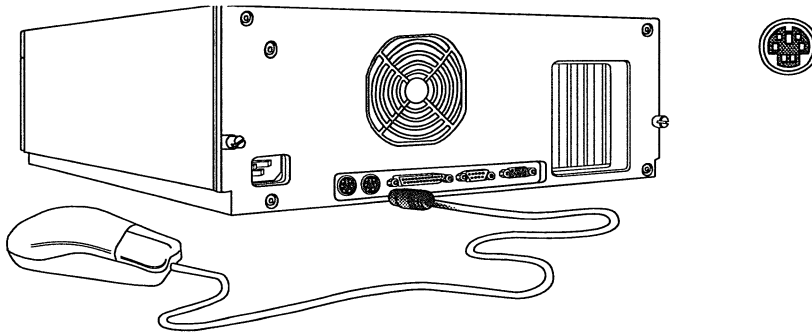
To connect the 9-pin serial mouse to your computer:

1. Turn your computer off.
2. Locate an available 9-pin serial port on the back of your computer (this port may be oriented either vertically or horizontally).
3. Insert the serial connector into the serial port and tighten the screws.
4. Start your computer.

Installing a Mouse with Mouse Port (PS/2) Connector

If you have a mouse with a round mouse port connector (also known as a PS/2 connector), connect the mouse to your computer by following the instructions below. Then skip the rest of this chapter and turn to "Installing the Software."

NOTE: Always turn the computer OFF before connecting or disconnecting your mouse.



To connect the mouse port to your computer:

1. Turn the computer off.
2. Locate an available 6-pin round port on your computer.
3. Insert the mouse connector into the round mouse port.

NOTE: Some round ports may look similar to the mouse port, but they may be incompatible with the connector on the mouse-port cable. If you cannot connect the mouse easily, do not force it. Locate the compatible round port or contact your computer dealer or hardware manufacturer for assistance.

4. Start your computer.

Installing the Software

This chapter explains how to set up the mouse software. The Setup disk that came with your mouse includes the software you need to set up and use the mouse.

Running the Setup Program

You can run the Setup program from either MS-DOS or Microsoft Windows (version 3.0 or higher). Once you start Setup, follow the instructions provided on the screen. Help is available in MS-DOS through windows at the bottom of the screen and in Microsoft Windows by pressing F1 or clicking the Help button.

If you would like the easiest, most convenient form of Setup, or if you are not comfortable with choosing which files to load, accept all the defaults and Setup will install the mouse software for MS-DOS and Microsoft Windows for you. If you have limited disk space, you can use the Custom option to have Setup install only specific files.

NOTE: Most of the files on the Setup disk are in a compressed format. The Setup program decompresses these files when it copies them to your disk. Compressed files are denoted with a dollar sign (\$) in the filename extension. For example, MOUSE.EX\$ is the compressed form of MOUSE.EXE.

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To Run Setup

1. Install the mouse hardware before you run Setup. See "Installing the Hardware" earlier in this section.
2. Start your computer.
3. Insert the Setup disk into the disk drive.
4. If you are running Setup from MS-DOS, skip to step 5.
If you have Microsoft Windows 3.0 or higher, start Windows. From the File menu in Program Manager, choose Run.
5. Specify the disk drive, and type **setup**. For example, type **a:setup** if you are using drive A.

In Windows 3.1 or higher, Setup integrates Mouse Manager into the Windows Control Panel. Setup also installs a mouse program group in Windows Program Manager. This group includes icons for a README file and Mouse Manager. You can move or copy the mouse program items into other program groups in Program Manager. For more information on program items and groups, see the *Microsoft Windows User's Guide*.

Files on the Setup Disk

If you choose a complete set up of the mouse software for Microsoft Windows and MS-DOS, Setup copies the following files to your system:

Filename	Description
ERGODEMO.DLL	Meet the Mouse demonstration
MOUSE.DRV	Mouse driver for Windows
MOUSE.EXE	Mouse driver for MS-DOS
MOUSE.INI	Mouse initialization file
MOUSEMGR.DLL	Library for Mouse Manager
MOUSEMGR.EXE	Mouse Manager for Windows and MS-DOS
MOUSEMGR.HLP	Help for Mouse Manager
POINTER.DLL	Mouse Manager features
POINTER.EXE	Executable file for POINTER.DLL
README.EXE	README viewer
README.TXT	Notes for this software version

The Mouse Drivers

The file that lets your mouse work with your computer is the mouse driver. The mouse driver for MS-DOS is called MOUSE.EXE. The mouse driver for Microsoft Windows is called MOUSE.DRV.

README file

The README file (README.TXT) contains information not available when this section was printed.

Meet the Mouse

Meet The Mouse for Microsoft Windows (ERGODEMO.DLL) is a short, animated demonstration that details the ergonomic and software features of the mouse. After Setup copies the files to your disk, you can run Meet The Mouse. Click the Meet The Mouse button from the final screen of Setup to start the demonstration. You can also run Meet The Mouse any time from Mouse Manager by clicking the Meet The Mouse button. To save disk space, you can delete this demonstration any time by deleting the ERGODEMO.DLL file from the directory that contains your mouse software.

Mouse Manager

Mouse Manager in MS-DOS and Microsoft Windows (MOUSEMGR.EXE) lets you customize the way the pointer responds as you move your mouse. It offers you a variety of features that turn your mouse into a powerful computing tool.

After Setup from MS-DOS copies the files to your disk, it asks if you would like to run Mouse Manager.

When installation from Windows is complete, Setup restarts Windows and automatically opens Mouse Manager to the Orientation screen so that you can begin customizing your software immediately. It is important to set Orientation immediately since you can hold the mouse in a variety of positions and you need to tell the software which way is up for your mouse. Then reset Orientation periodically because the way you hold the mouse may change over time.

After you complete the Setup program, you are ready to use the mouse with your applications. See "Using the Mouse" for details on using the mouse and "Using Mouse Manager" for information on Mouse Manager.

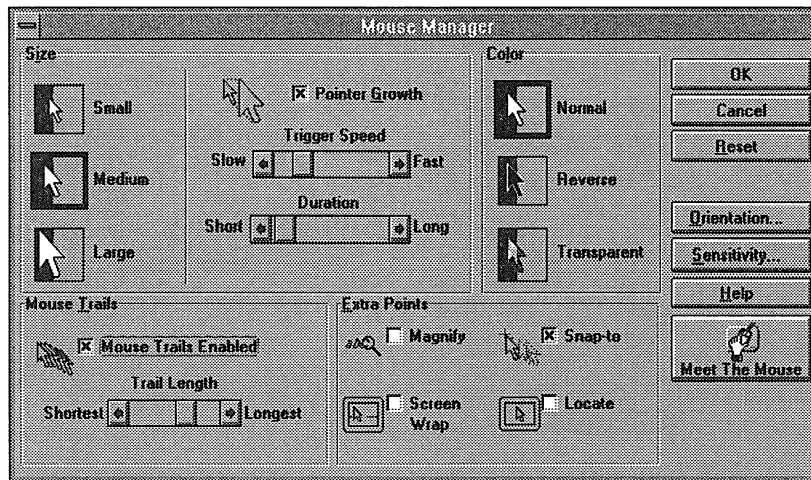
If you encounter problems while running Setup, see "Troubleshooting the Mouse" later in this section.

Using Mouse Manager

This chapter describes the various Mouse Manager features. Mouse Manager helps turn your pointing device into a powerful computing tool. Both the Microsoft Windows and MS-DOS versions of Mouse Manager let you adjust several mouse options.

NOTE: If you do not have Mouse Manager (shown in this chapter), your computer manufacturer did not install the mouse software that comes with this mouse.

Running Mouse Manager for Windows



When Setup installs for Windows, Mouse Manager replaces the standard mouse options in the Control Panel that comes with Windows 3.1. For all versions of Windows 3.X, a new program group is created that includes Mouse Manager. Mouse Manager includes extensive Help, accessible by pressing F1 or by choosing the Help button.

To Run Mouse Manager for Microsoft Windows

1. In Windows 3.0, open the Mouse group.
In Windows 3.1, open the Windows Control Panel or Mouse Group.
2. Double-click the mouse icon.

Each feature in Mouse Manager is described on the following pages.

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Size

Use this feature to adjust the pointer size. You can choose a small, medium or large pointer. Choosing a larger size may dramatically improve pointer visibility on liquid crystal display (LCD) screens. Select the desired pointer size on the screen.



Pointer Growth

Use this feature to enable Pointer Growth if you choose a medium or large pointer. This feature makes the pointer grow to the selected size depending on the Trigger Speed; then the pointer shrinks back to its smaller size depending on the Duration. Trigger Speed is a speed limit, and Duration is a time period. When you move the pointer faster than the Trigger Speed, the pointer switches to the larger size. After the mouse stops moving, the pointer waits the Duration, then switches to the smaller size. Duration can vary from zero to 10 seconds.

NOTE: Application-specific pointers in Windows grow but do not shrink back to the smaller size.



Color

Use this feature to choose the color of the pointer. Choosing a different color may dramatically improve pointer visibility, especially on LCD screens. You can choose a normal, reverse or transparent pointer. Select the desired pointer color on the screen.



Mouse Trails

Use this feature to give your pointer a comet-like effect that helps improve pointer visibility on your screen. When you turn on the Mouse Trails Enabled box, you can also adjust the length of the mouse trail.

NOTE: This feature is supported for Microsoft video drivers that come with Windows 3.1 (EGA, VGA, and Super VGA) and drivers that are 100-percent compatible with Windows 3.1 video drivers.

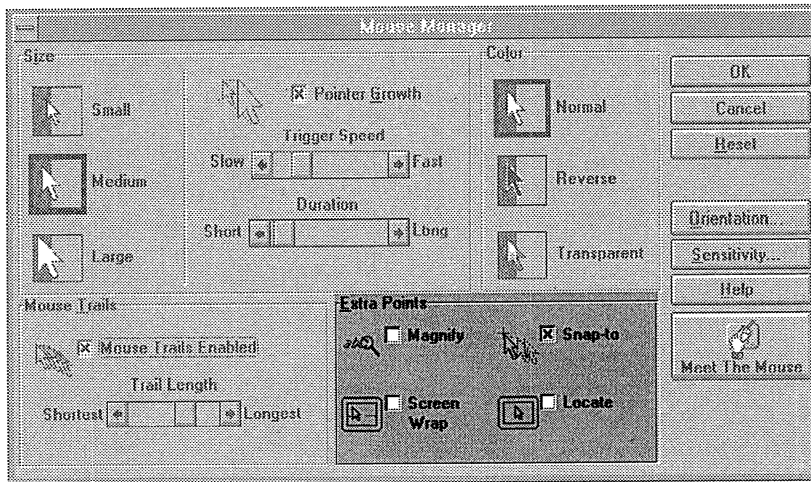


Meet The Mouse

Run Meet The Mouse to see a short, animated demonstration that details the ergonomic and software features of the mouse. You can delete this demonstration to save disk space by deleting the ERGODEMO.DLL file from the directory that contains your mouse software.

NOTE: This feature is supported for VGA or higher-resolution displays.

Mouse Manager Extra Points

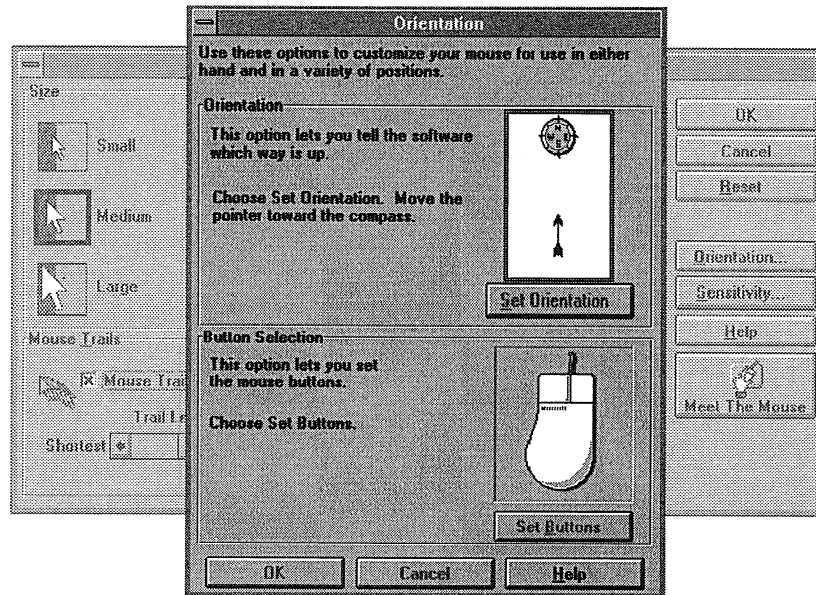


The Extra Points features of Mouse Manager are powerful tools that let you manipulate the pointer on the screen. To enable a feature in Extra Points, turn on the box next to the feature.

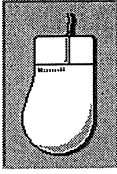
Two of the features, Magnify and Locate, need a combination of a keyboard key and a mouse button for operation. When you enable these features in Mouse Manager, a list box appears and gives you a list of mouse and key combinations. Select the combination of your choice. When you want to activate Magnify or Locate, press the key and click the mouse button you selected. If you do not remember, you will find your choice listed below the feature in Mouse Manager.

NOTE: Press the key first and hold it down while clicking the mouse button to activate Magnify and Locate.

Orientation



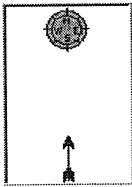
Click the Orientation button on the first Mouse Manager window to open the Orientation screen. The Orientation screen includes the Button and Orientation Selection features.



Button Selection

Use this feature to specify the buttons you want to use as your primary and secondary buttons. The primary mouse button is most commonly the left button on the mouse, but you can customize your mouse buttons so that the primary button is the right button. This is so that you can use the mouse with ease in either hand. To run Button Selection, click Set Buttons and follow the instructions on the screen.

NOTE: Primary and secondary buttons are referred to as left and right buttons in some documentation.

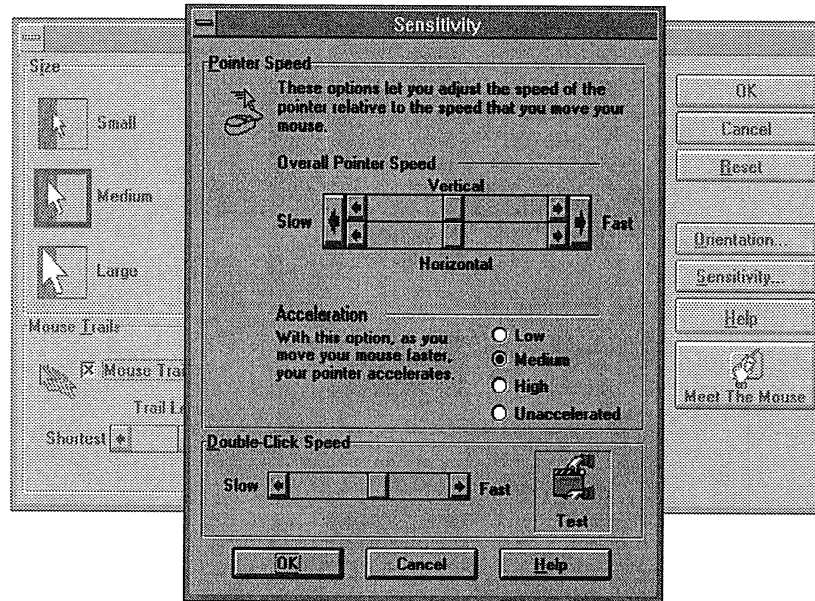


Orientation

Use this feature to set the direction for the pointer to travel on the screen when you move the mouse. Individual mouse users hold and move the mouse differently, and Orientation lets each user customize the software to arrive at the most comfortable alignment. This is also helpful if you vary your hand positions. To run Orientation, click the Set Orientation button and follow the instructions on the screen.

Remember, you are setting the direction in which the ball of your mouse is traveling. You can align your mouse in a variety of positions, then use Orientation to tell the software which way is up for the ball of your mouse. This feature lets you occasionally change the way you hold the mouse-you will find this to be a comfortable work habit.

Sensitivity



Click the Sensitivity button on the first Mouse Manager window to open the Sensitivity screen. Sensitivity includes Overall Pointer Speed, Acceleration and Double-Click Speed.



Pointer Speed

Use these features to control how fast or slowly the pointer moves as you move your mouse. Depending on the applications you use, there are times when you may want fast pointer movement and other times when you may want very slow, fine pointer movement.

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Overall Pointer Speed is the ratio of actual mouse movement to pointer movement. You can adjust Overall Pointer Speed using slider bars to set axes independently. That is, the sensitivity for the horizontal (left/right) axis can be different from the sensitivity for the vertical (up/down) axis. You can also change the sensitivity settings for both axes simultaneously by clicking the large arrows on either side.

Acceleration varies sensitivity with changes in the speed of the mouse. For example, when you use an accelerated mouse profile (Low, Medium, or High), and you move the mouse quickly—even over a very small distance—the pointer moves farther across the screen than when you move the mouse slowly. A small, fast mouse movement can move the pointer completely across your screen, while a large, slow movement may move the pointer only an inch or two. Try each of the four selections to see which works best with your application.



Double-Click Speed

Use this feature to set the speed with which the software recognizes a double-click. Double-clicking means pointing to an object on the screen and quickly clicking a mouse button twice.

Double-click the Test box to see how fast your double-click setting is recognized. The clapper board opens or shuts when it recognizes a double-click.

Command Buttons

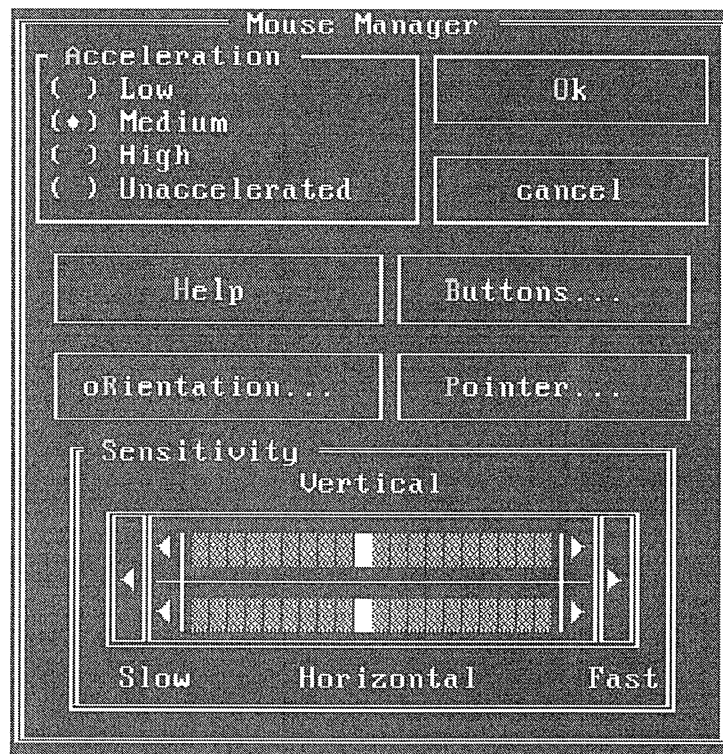
OK saves the settings you have made in the current session of Mouse Manager and closes the active screen. Mouse Manager writes the configuration to the MOUSE.INI file and these settings are saved until the next time you change them.

Cancel undoes any of the changes you have made to the pointer during the current session in Mouse Manager, then closes the screen in which you are currently working.

Reset returns the pointer to its default Microsoft Windows pointer settings. This button only applies to the first Mouse Manager window.

Help provides extensive help on the mouse and its software. See "Viewing Technical Notes" in Help for additional information about the mouse.

Running Mouse Manager for MS-DOS



The MS-DOS version of Mouse Manager lets you adjust several mouse options for MS-DOS based applications. Use the following procedure to run Mouse Manager for MS-DOS.

If the mouse is not in your AUTOEXEC.BAT path, first change to the directory that contains Mouse Manager before you run the program.

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To Run Mouse Manager for MS-DOS

1. Make sure your mouse is connected and that the mouse driver is loaded.
2. At the command prompt, type:

mousemgr

Mouse Manager is displayed. An error message is displayed if the MS-DOS mouse driver is not properly loaded.

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You can set the following features for applications available in MS-DOS:

Acceleration

When you select a different acceleration profile, you change the ratio between the distance the pointer moves on your screen and the speed of mouse movement. These profiles are listed by name in Mouse Manager. Acceleration profiles cause the pointer to move greater or lesser distances across the screen depending upon how quickly you move the mouse.

Help

Help is available for each option in Mouse Manager.

Buttons

Mouse Manager lets you choose the buttons that you want to use for primary and secondary buttons. Some documentation refers to these buttons as right and left buttons.

Orientation

Orientation sets the direction for the pointer to travel on the screen when you move the mouse. Individual mouse users hold and move the mouse differently, and Orientation lets each user customize the software to arrive at the most comfortable alignment.

Pointer

The Pointer options let you adjust the size and color of the pointer. If you increase the size of the pointer, you can also adjust the threshold and delay of pointer growth. (These features are called Trigger Speed and Duration in the Windows version of Mouse Manager.) The Growth feature makes the pointer grow to a larger size depending on the threshold setting (a speed limit); then the pointer shrinks back to its smaller size depending on the delay setting (a time period).

Sensitivity

Mouse sensitivity is the ratio of actual mouse movement to pointer movement. The sensitivity for the horizontal (left/right) axis can be different from the sensitivity for the vertical (up/down) axis. You can also change the sensitivity settings for both axes simultaneously by clicking the large arrows at either end.

Troubleshooting the Mouse

This chapter provides tips and strategies for problems you may encounter with the mouse either during installation or normal use. Details on cleaning your mouse are also included here.

Troubleshooting Table

Use the following guide if you encounter problems with your mouse.

Problem

General failures during Setup

Action

Setup may not work properly if you have used the MS-DOS append command. If this command is in effect, remove it before running Setup by typing append; at the MS-DOS command prompt (include the semicolon). If Setup fails from Windows, exit Windows and try running Setup in MS-DOS. Conversely, if Setup fails from MS-DOS, try running it in Windows.

Chapter 5: Mouse User's Guide

Problem

The message "Microsoft Mouse not found. Try another 9- or 25- pin serial port and/or check for interrupt conflicts with other peripherals" appears after running Setup.

Action

Try typing mouse/F at the prompt in the directory that contains your mouse software in MS-DOS for a list of all the mouse devices.

If your mouse is attached to a serial port, make sure that your port is configured correctly. Your port should conform to IBM standard RS-232C. (Serial port COM1 should use interrupt IRQ4, and COM2 should use IRQ3. Those interrupts should not be shared by other devices.)

If you have an internal modem or a netcard on IRQ3 or IRQ4, you may have a conflict. Switch your mouse to a different serial port or reconfigure your serial port so that it does not conflict with the mouse port (see the user's guide for your computer).

If, after checking the mouse installation and restarting your computer, you still receive the error message, you may want to try installing the mouse on another system to determine whether the problem is with the mouse or the system. If you still have problems, call Micron Computer, Inc.

Problem

Erratic mouse movement.

Action

Clean the mouse. See "Cleaning Your Mouse" in this chapter.

If the mouse movement is still erratic after you have cleaned it, remove the ball and move the rollers with your finger. Watch to see if the pointer is erratic in the horizontal or vertical direction and note that. Then try this on a different machine. If you obtain the same results, the problem is the mouse. Call Micron Computer, Inc.

If the movement is erratic in both the horizontal and vertical directions, try a different mouse on the same machine to determine if the problem is software or hardware related. Then call Micron Computer, Inc.

If you are using a serial to PS/2 adapter, remove the adapter and try using your mouse on the serial port.

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Problem

The message "Microsoft Mouse not found. Try another 9- or 25- pin serial port and/or check for interrupt conflicts with other peripherals" appears after you have been using your mouse for some time.

Action

If you have recently installed another device into your computer, remove it. If the problem goes away, you may have an interrupt conflict. If your mouse is connected to the COM1 interface, use COM2 or COM4 for the other device. If your mouse is connected to COM2, use COM1 or COM3 for the other device.

Try typing mouse/F at the prompt in the directory that contains your mouse software in MS-DOS for a list of all the mouse devices.

Problem

General mouse problems

Action

If you change the configuration of your system after you have installed the mouse software, you may need to run Setup again to set up the mouse software for the new configuration.

Try typing mouse/? at the prompt in the directory that contains your mouse software for help about the MS-DOS mouse driver.

Cleaning Your Mouse

If you notice that the pointer does not move smoothly or that the mouse does not move freely, you should clean your mouse.

To clean your mouse:

1. Turn your computer off.
2. Turn your mouse upside down and remove the mouse-ball cover.
3. Turn your mouse right-side up. The ball should drop into your hand. If it doesn't, gently shake the mouse until the ball drops out of its socket.
4. Once the ball is free, use adhesive tape to pick up any dust or lint on the surface of the ball. Wipe away dirt or lint inside the mouse socket. You can also blow gently to remove dirt and lint.

If lint is trapped inside the socket or on the rollers, use a cotton swab dipped in isopropyl alcohol to loosen it. Allow surfaces to dry completely after cleaning.
5. Return the ball to its socket and replace the mouse-ball cover.

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Mouse Settings

The following table lists the settings stored in the MOUSE.INI file, together with default and allowable values. The syntax for each setting is the name of the setting, followed by an equal sign (=), and a value for that setting. See Help in Mouse Manager for Windows for more information about MOUSE.INI settings ("The MOUSE.INI File").

The exact setting names are listed in your MOUSE.INI file.

<u>Setting</u>	<u>Default Value</u>	<u>Allowable Values</u>	<u>Switches</u>
Mouse Type	none	Serial 1,2 PS/2 InPort 1,2 Bus	/Cn /Z /In /B
Interrupt Rate	1	0,1, 2, 3, 4	/Rn
Sensitivity			
Horizontal only	50	5-100	/Hn
Vertical only	50	5-100	/Vn
Horizontal and vertical	50	5-100	/Sn
Active Acceleration Profile	2	1, 2, 3, 4	/Pn
Cursor Display			
Cursor Display Delay	0	0-10	/Nn
Force Default Cursor	off	on/off	/M
Hardware Cursor Support	off	on/off	/Y
Rotation Angle	0	0-359	/Or
Button Selection			
Primary	1	1,3	/KPnSm
Secondary	3	1,3	/KPnSm
Load Mouse in Low Memory	off	on/off	/E
Find all Mouse Devices	off	on/off	/F
Help for Mouse Switches	off	on/off	/?

Product Support

If you have a problem with your mouse, first check "Installing the Hardware" and "Installing the Software" in this section to make sure that the mouse is installed correctly.

If you cannot find the answer in this chapter, contact Micron Computer, Inc. When you call, you should be at your computer with the following information at hand:

- The FCC ID number (found on the underside of the mouse)

- The *Mouse User's Guide*

- The make and model of your computer

- An MS-DOS system disk for restarting your computer

- A list of the peripheral devices attached to your computer

- The exact wording of any messages that appeared on your screen

- What happened and what you were doing when the problem occurred

- How you tried to solve the problem

United States Radio and TV Interference Regulations

The Microsoft hardware device(s) described in this manual can radiate radio frequency (RF) energy. If not installed and used in strict accordance with the instructions given in this manual, the device may cause harmful interference with radio and TV reception. Any cable that is connected to the Microsoft Mouse connector must be a shielded cable that is properly grounded.

Your Microsoft hardware device has been tested, and it complies with the limits for a Class B computing device in accordance with the specifications in Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful RF interference in a residential installation. There is, however, no guarantee that RF interference will not occur in a particular installation.

To determine if your hardware device is causing interference, disconnect the device from your computer. If the interference stops, it was probably caused by the device. If the interference continues after you disconnect the hardware device, turn the computer off and then on again. If the interference stopped when the computer was off, check to see if one of the input/output (I/O) devices or one of the computer's internal accessory boards is causing the problem. Disconnect the I/O devices one at a time and see if the interference stops.

If your computer does cause interference, try the following measures to correct it:

- Relocate the radio or TV antenna until the interference stops.

- Move the computer farther away from the radio or TV, or move it to one side or the other of the radio or TV.

- Plug the computer into a different power outlet so that the computer and radio or TV are on different circuits controlled by different circuit breakers or fuses.

- If necessary, ask your computer dealer or an experienced radio-TV technician for more suggestions. You may find helpful information in the booklet *How to Identify and Resolve Radio-TV Interference Problems*, published by the FCC. The booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 004-000-00345-4.

NOTE: Any changes or modifications not expressly approved by Microsoft could void the user's authority to operate this device.

Canadian Radio Interference Regulations

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Cet appareil n'émet aucune interférence radioélectrique supérieure aux limites imposées aux appareils numériques de classe B et décrites dans le règlement du Ministère des Communications du Canada concernant le brouillage radioélectrique.

Introduction

If you are experiencing problems with your Micron system and the Troubleshooting section located in Chapter 6 does not provide the information you need, feel free to contact Micron technical support at 1-800-877-8856. But first, take a few minutes to read this section for information about the equipment and information you might need to help the technical support representative diagnose your problem.

Before You Call

Before contacting Micron technical support, please follow the next few steps. They are designed to prepare you for any of the questions the technical support representative might ask or any procedures you need to perform.

- 1) Make sure your system is plugged into a grounded power outlet.
- 2) Locate the failing system as near a telephone as possible, preferably close enough so that you can talk with the technical support representative and work on the system at the same time.
- 3) Have a medium to small sized Phillips-head screwdriver available. You may need to open your system to correct the problem.
- 4) Write down all error information you can remember, including error messages, software used (including version numbers), etc.

Micron technical support will work to solve your problem as quickly as possible. However, in some extreme cases, your system may need to be returned to Micron Computer, Inc. for repair. The next section describes how to do this.

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Returning Equipment to Micron

If it is determined that your system needs to be returned to Micron for repair or replacement, please observe the rules listed on this page. Failure to follow any of these rules may result in long delays in repair or the simple return of the system without repair.

- 1) Contact Micron technical support at 1-800-877-8856 to obtain an RMA (Return Material Authorization) number and to obtain shipping instructions before returning any portion of your system.
- 2) Make sure all printed-circuit boards or static-sensitive peripherals are completely enclosed in anti-static bags or foam.
- 3) Print the RMA number in large, black letters on the outside of all shipping boxes.
- 4) Enclose a note describing the problem as well as the name of the technical support representative who authorized the return.

Micron also highly recommends that you follow these additional steps for your protection:

- 1) Make a complete backup of your hard drive(s) before returning the system.
- 2) Use the original packing material that came with your system.

Please ship to the following address:

Micron Computer, Inc.
Attn: RMA #xxxx
900 East Karcher RD
Nampa, ID 83687

Please Note:

**It is essential to obtain this
RMA number from
Technical Support or
Customer Service
BEFORE returning an
Micron material.**

Appendix B: Post and Boot Messages

Introduction

POST (Power On Self Test) has two kinds of messages; those messages are the Error message and the Informational message. The following tables list these messages, their causes, and their solutions.

NUMBER/MESSAGE	POSSIBLE CAUSE	SOLUTION
0601: NO DISKETTE CONTROLLER	If floppy controller is not found.	Change the configuration.
0616: DISKETTE DRIVE RESET FAILED	The diskette adapter has failed.	Check the diskette adapter.
0642: DISKETTE DRIVE B FAILURE	The B drive failed or is missing.	Check the B drive.
0632: DISKETTE DRIVE A FAILURE	The A drive failed or is missing.	Check the A drive.
0653: DISKETTE READ FAILURE; STRIKE F1 TO RETRY BOOT	The diskette is not formatted or is defective.	Replace the diskette with a formatted diskette and retry.
2401: DISPLAY ADAPTER FAILED; USING ALTERNATE	The color/monochrome switch is not set correctly, or the primary video adapter failed.	Change the switch to the correct setting, or check the primary video adapter.
1715: ERRORS FOUND; DISK X FAILED INITIALIZATION	The POST reports hard disk configuration information is incorrect.	Rerun SETUP and enter the correct hard disk information.
0164: ERRORS FOUND; INCORRECT CONFIGURATION INFORMATION; MEMORY SIZE MISCOMPARE	The POST reports the size of base, or the expansion memory, does not agree with configuration information.	Enter correct memory size and rerun SETUP procedure.
0115: GATE A-20 FAILURE	Protected mode can not be enabled.	Check system board.

Table B-1 Post and Boot Messages

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NUMBER/MESSAGE	POSSIBLE CAUSE	SOLUTION
1704: FIXED DISK CONFIGURATION FAILURE	The specified configuration is not supported.	Correct the hard disk configuration.
1702: FIXED DISK CONTROLLER FAILURE	The controller card has failed.	Replace controller card.
1701: FIXED DISK X FAILURE (where X=0 or 1)	The hard disk crashed.	Press F1 to reboot. Replace hard disk if that does not work.
1726: HARD READ FAILURE-STRIKE F1 TO RETRY BOOT	The hard disk failed.	Press F1 to reboot. Replace hard disk if that does not work.
0655: FDD CONTROLLER FAILURE	Diskette controller failed.	Replace controller card.
0610: FDD A IS NOT INSTALLED	Can not find diskette controller for drive A.	Install or replace controller card.
0612: FDD B IS NOT INSTALLED	Can not find diskette controller for drive B.	Install or replace controller card.
0103: NO TIMER TICK INTERRUPT	The timer tick (8254) failed to generate interrupt.	Check the timer chip on the system board.
0171: SHUTDOWN FAILURE	The shut down logic failed.	Check the keyboard controller.
0103: TIMER 2 FAILURE	Timer 2 (8254) failed.	Check the timer chip on the system board.
0303: KEYBOARD CONTROLLER FAILURE	The Keyboard logic failed.	Check the keyboard controller.
0304: KEYBOARD CLOCK LINE FAILURE OR KEYBOARD DATA LINE FAILURE	The Keyboard logic failed.	Make sure the keyboard cable is connected correctly.
0301: KEYBOARD STUCK KEY FAILURE	The Key(s) is jammed	Try pressing the keys again.
0168: REAL TIME CLOCK FAILURE	The Real-time clock logic failed.	Replace Real-time clock chip.

Table B-1 Post and Boot Messages (cont'd)

Appendix B: Post and Boot Messages

NUMBER/MESSAGE	POSSIBLE CAUSE	SOLUTION
0163: TIME-OF-DAY NOT SET-RUN SETUP PROGRAM	The Real-time clock time-of-day is not running.	Run SETUP utility.
0121: BIOS XXXX ROM BAD CHECKSUM (where XXXX=c8000 to E0000)	The optional ROM checksum is bad.	Replace Add-on card.
0130: DISKETTE READ FAILURE, or NOT A BOOT DISKETTE, or NO BOOT DEVICE AVAILABLE	If Boot from floppy diskette failed.	Replace the diskette with a bootable diskette and retry.
0170: UNEXPECTED INTERRUPT IN PROTECTED MODE	An unexpected interrupt occurred in the protected mode while in memory test.	Check the logic associated with the non-maskable interrupt.
0201: DECREASING AVAILABLE MEMORY, or MEMORY FAILURE AT AAAAAAAA READ XXXX EXPERTING YYYY (WHERE AAAAAA=failing address, XXXX=data read, and YYYY=data written)	The memory data integrity failed.	Check contact points between memory modules and system board. Replace memory modules if necessary.
0173: INVALID EISA CONFIGURATION STORAGE-PLEASE RUN THE CONFIGURATION UTILITY	The EISA configuration storage checksum is bad.	Run EISA configuration utility.
0174: CONFIGURATION ERROR FOR SLOT NN-PLEASE RUN THE CONFIGURATION UTILITY	The EISA configuration mismatched EISA NVRAM.	Run EISA configuration utility and the EISA configuration file provided by the add-on card dealer.
0165: INVALID ISA CONFIGURATION	The ISA configuration is mismatched.	Run setup utility.
0164: MEMORY HAS BEEN ADDED OR REMOVED	The memory amount has changed.	Run setup utility.

Table B-1 Post and Boot Messages (cont'd)



Appendix C: Hard Drive Information

BIOS Hard Disk Types ...

Type	Cylinders	Heads	Write- Precomp	Landing Zone	Sectors	Capacity (Mbytes)
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	31
4	940	8	512	940	17	62
5	940	6	512	940	17	47
6	615	4	65535	615	17	20
7	462	8	256	511	17	31
8	733	5	65535	733	17	30
9	900	15	65636	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	50
13	306	8	128	319	17	20
14	733	7	65535	733	17	43
15	Unused	0	0	0	0	0
16	612	4	0000	663	17	20
17	977	5	300	977	17	41
18	977	7	65535	977	17	57
19	1024	7	512	1023	17	60
20	733	5	300	732	17	30
21	733	7	300	732	17	43
22	733	5	300	733	17	30
23	306	4	0000	336	17	10

Continue to B-2 for additional types

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Type	Cylinders	Heads	Write-Precomp	Landing Zone	Sectors	Capacity (Mbytes)
24	325	7	0000	925	17	54
25	615	9	65535	925	17	69
26	754	7	754	754	17	44
27	754	11	65535	754	17	69
28	699	7	256	699	17	41
29	823	10	65535	823	17	68
30	918	7	918	918	17	53
31	1024	11	65535	1024	17	94
32	1024	15	65535	1024	17	128
33	1024	5	1024	1024	17	43
34	612	2	128	612	17	10
35	1024	9	65535	1024	17	77
36	1024	8	512	1024	17	68
37	615	8	128	615	17	41
38	987	3	987	987	17	25
39	987	7	987	987	17	57
40	820	6	820	820	17	41
41	977	5	977	977	17	41
42	981	5	981	981	17	41
43	830	7	512	830	17	48
44	830	10	65535	830	17	69
45	917	15	65535	918	17	114
46	1224	15	65535	1223	17	152
47	User Configured					

The Micron Supplied Hard Drives . . .

Most Micron computers come with preconfigured Maxtor, Quantum, or Connor hard drives installed. Micron uses several different models, depending on the customer's order. The IDE drives all have integrated IDE controllers with a 1:1 interleave rating. All drives have been low-level formatted and tested at the factory. ***Never low-level format any of these drives as this may cause the drive to fail.*** The drive statistics are shown on this and the following page. Make a note of them in case your internal battery fails or the CMOS loses its information.

Model	Cylinders	Heads	WPcom	Lzone	Sectors/Tracks	Setup Size
Maxtor:						
7080A	981	10	65535	0	17	81MB
7120A	936	16	65535	0	17	124MB
or	1024	16	65535	0	17	119MB
7213A	683	16	65535	0	38	203MB
LXT213A	683	16	65535	0	38	203MB
7245A	967	16	65535	0	31	234MB
LXT340A	654	16	65535	0	63	322MB
7345A	790	15	65535	0	57	324Mb
LXT535	1036	16	65535	0	63	522MB
MXT540AL	1024	16	65535	0	63	540MB

Appendix C: Hard Drive Information

Model	Cylinders	Heads	WPcom	Lzone	Sectors/Tracks	Setup Size
Quantum:						
52AT LPS	751	8	65535	0	17	50MB
80AT	1024	9	65535	0	17	77MB
120AT	814	9	65535	0	32	114MB
210AT	873	13	65535	0	36	199Mb
245AT	723	13	65535	0	51	234MB
Conner:						
CP30084E	903	4	65535	0	46	85MB
CP30104	776	8	65535	0	33	120MB
CP30174E	903	8	65535	0	46	170MB
CP3204	683	16	65535	0	38	200MB
CFS210A	685	16	65535	0	38	209MB
CP30254	895	10	65535	0	55	252MB
CP30344	665	16	65535	0	63	343MB
CFS420A	826	16	65535	0	63	425MB
CFA540A	1023	16	65535	0	63	545MB
CP30544	1023	16	65535	0	63	545MB

How the Setup Size is Calculated . . .

Quite often the CMOS setup program reports a hard drive size that is smaller than the hard drive actually installed. This is not a mistake. The hard drive size is determined in the following fashion:

$$\frac{\text{Cylinders} \times \text{Heads} \times \text{Sectors} \times 512 \text{ (bytes per sector)}}{1,048,576 \text{ (actual size of a MB in bytes)}}$$

For example, we will calculate the size of the Maxtor 7245A:

$$967 \times 16 \times 31 \times 512 = 245,571,584 \text{ bytes}$$

$$\frac{245,571,584}{1,048,576} = 234.195 = 234\text{MB}$$

By this example, although the Maxtor 7245A is shown as a 234MB drive, it actually possesses over 245.4 million bytes of storage space.

C

C

C

Glossary

Application: A software program that operates under an operating system to perform a specific task.

BIOS: Basic Input/Output System. Programs that are permanently stored in the system board's ROM chips providing functions such as the power-on self test. Also see ROM.

Boot: To start the computer system and load the operating system.

Bus: The set of address or data lines used to transfer information between different components within a computer (such as memory, the microprocessor, and the expansion slots).

Cache: Provides fast, local storage for frequently accessed instructions and data to provide the processor with the fastest stream of information possible. Even so, main memory is kept current.

Clock: A circuit that sends a consistent, periodic signal that is used to synchronize the computer and to step information through the system.

Closed: A circuit that is complete. Usually accomplished by placing a jumper over two pins on the system board or a peripheral card. Also see "Open" and "Jumper."

CMOS: Complementary Metal Oxide Semiconductor. A logic circuit family that uses very little power. Sometimes used to store information by applying constant, uninterrupted power through the use of an external battery.

Coprocessor: A microprocessor device that performs specialized computations (such as floating-point arithmetic) much more efficiently than the microprocessor alone.

CPU: Central Processing Unit. The integrated circuit chip that performs the actual computing functions of the computer. Other chips perform support functions like storing data and controlling peripherals. Also see microprocessor.

Disk: See "Floppy Disk" and "Hard Disk."

DMA: Direct Memory Access. A method for transferring data directly to and from system memory, bypassing the microprocessor.

DOS: See "Operating System."

DRAM: Dynamic Random Access Memory; requires a periodic refresh cycle to keep the stored information from being lost. Loss of power causes loss of data in this memory.

EISA: Acronym for Extended Industry Standard Architecture.

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Expansion Slot: A connector on the motherboard for holding a peripheral card.

Floppy Disk: A 3.5 inch or 5.25 inch removable storage medium used for storing programs and files externally from the computer system.

Format: A process which prepares a disk to hold data. For hard disks, there are two formatting process: low-level and high-level.

Hard Disk: An internal or external, high capacity, high speed storage medium.

Hertz (Hz): A unit of frequency equal to one cycle per second.

I/O Port: A connector that allows external and some internal peripherals to communicate with the computer system (e.g., serial ports and parallel ports).

I/O: An abbreviation for "input/output," a generic term that refers to the devices and processes involved in the computer's reading and writing data.

Integrated Circuit: An electronic device that combines thousands of transistors on a small chip of silicon or other semiconductor. Such devices are the building blocks of computers.

Interface: The connection between the computer and its human operator, or between the computer and peripheral device.

ISA: Industry Standard Architecture. The standard bus interface that was implemented in the IBM AT.

Jumper: On a printed circuit board, a patch cable or wire used to establish a circuit.

Megahertz (MHz): A frequency of 1 million cycles per second.

Memory: Devices used to hold information and programs while they are being accessed by the microprocessor. See also RAM and ROM.

Microprocessor: An integrated circuit that contains the circuits the computer needs to calculate and to communicate with the other parts of the system. See also CPU.

Modem: A device designed to allow computers to communicate over standard phone lines.

Motherboard: See "System Board."

Non-Volatile Memory: Memory which is maintained even when power is not on.

Open: A circuit that is not complete. Usually accomplished by removing a jumper from two pins on the system board or a peripheral card. Also see "Closed" and "Jumper."

Appendix D: Glossary

Operating System: The software that provides a link between application programs and the computer hardware (e.g., disks, memory).

Page Mode: Special function in DRAM that saves up to about 30% in cycle time by not re-loading RAS bits.

Page: Sections of memory consisting of sets of consecutive bytes. Pages begin on 4-Kbyte boundaries.

Peripheral Card: A printed circuit board that gives the computer added capability, such as more memory or control of a new device. A card plugs into one of the expansion slots located on the system board.

Peripheral: Any device that is connected to the computer system (e.g., printers, keyboard, plotters, etc.).

Pin: Any of the leads on a device, such as an integrated circuit, that plug into a socket and connect to a system.

Power-On Self Test (POST): Check-out procedures that the BIOS runs automatically when the system is turned on. These procedures verify that all computer hardware is functioning properly. If the test detects problems, the computer displays error codes before (or instead of) starting the operating system. The error codes can help a service person determine what is wrong with the computer.

Program: A set of instructions that a computer interprets to perform some task. Also see "Application" and "Operating System."

RAM: Random-Access Memory. The type of computer memory that can be used to store information while a program is running. RAM consists of a number of small integrated circuits that are plugged into the motherboard or an external memory card.

ROM: Read-Only Memory. The type of computer memory that is used to permanently store the information vital to computer operation, including some parts of the operating system. ROM is permanent and the contents will not be lost when the computer is turned off.

Setup Program: Used to inform the computer about installed peripheral, memory, configuration information, date and time, etc.

Shadow RAM: A method of copying BIOS routines from slower ROM chips to much faster RAM, increasing system performance.

SIMM: Single In-line Memory Module: A small circuit board containing memory components that plugs into special sockets located on the motherboard for upgrading the system memory. These modules generally need to be inserted in groups of two or four.

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Software: A general term that describes a program or set of programs.

SRAM: Static Random Access Memory. Does not require periodic refreshing that dynamic memory requires.

System Board: The large printed-circuit board in a computer on which most electronic devices are mounted; the primary board in a computer. All other interfaces receive control signals or information from the motherboard. Also commonly referred to as the "mainboard" or "motherboard."

System Unit: The description for the computer case and all internal components (e.g., the system board, expansion cards, disk drives, power supply, etc.).

System: The assembly of basic components (e.g., power supply, motherboard, memory, video monitor, etc.) united by some form of communication to form an organized whole.

VESA: Acronym for Video Electronics Standard Association.

Wait State: A delay in the computer's information processing cycle caused by a difference in speed between a faster processor and slower memory. A 0 wait state means the processor does not have to "wait" for memory, and can access data as fast as needed.

Write Precompensation: In a hard disk, the varying of the timing of the read/write head current on the inner tracks of the disk to maintain a constant signal.

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FCC Information

Class B Digital Device: This device complies with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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